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Beyond traditional metrics: A multi-dimensional index for assessing quality of life across countries

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ABSTRACT

BACKGROUND AND OBJECTIVES: The assessment of quality of life is a complex, multi-dimensional task that incorporates both objective and subjective indicators. Traditional economic metrics often fail to fully capture the true well-being of populations. This paper aims to analyze existing methods for assessing quality of life, propose a comprehensive and flexible index that integrates multiple indicators, and highlight the importance of balancing objective and subjective criteria to better understand the dynamics of population well-being across different countries.

METHODS: The study reviews various approaches to measuring quality of life, including objective, subjective, and complex methodologies. It synthesises data from international research, including indices such as the Human Development Index, the Euromodule, and the Happiness Index, among others. The authors develop a new assessment framework based on constructing composite indices from selected indicators across the economic, social, demographic, and environmental sectors, integrated in a linear form with weights defined by factor analysis. Graphical data analysis, normalisation, and index formation techniques are used for comparative assessments across countries.

FINDINGS: Existing methods, such as the Human Development Index and the Happiness Index, have limitations in capturing the full scope of quality of life due to their focus on either objective or subjective components alone. The proposed complex quality-of-life index, integrating multiple sub-indicators, offers a more comprehensive picture of population well-being. It shows that in Armenia quality-of-life score gradually increased from 0.321 in 2012 to 0.355 in 2018, but after reaching its highest point, the score decreased to 0.337 in 2019, remaining lower at 0.353 in 2020 and 0.336 in 2021. This indicates that the country experienced a decline or volatility in quality-of-life measures in recent years. Despite these fluctuations, the scores remained within a relatively narrow range (approximately 0.321 to 0.355), suggesting that while improvements and setbacks occurred, the overall level of quality of life remained moderately stable over the last decade.

CONCLUSION: The complex approach presented provides a valuable framework for ongoing international comparisons and for tracking changes in quality of life over time, emphasizing the importance of integrating diverse socio-economic and cultural factors into quality-of-life assessments.

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INTRODUCTION

Over the past decade, high rates of economic growth have not necessarily led to improved Quality of Life (QoL) or reduced poverty levels across the globe (Lavell et al., 2023; Balaj, 2024). In some cases, poverty has deepened further (Wimer et al., 2024; Yusuf et al., 2024). Countries leading the way in socio-economic development tend to have high levels of education, science, healthcare, and cultural development rather than high rates of economic growth (Fonseca et al., 2024; Miah et al., 2024). Therefore, economic growth must be directed towards improving the quality of life of the population (Sergi et al., 2023). This justifies the need to assess the role and impact of a high QoL in the context of modernity. QoL indices are essential scientific tools for understanding, monitoring, and improving population well-being. They provide policymakers, researchers, and communities with actionable insights, making their study and assessment a cornerstone of public health, social science, and policy research. Quality of Life Indexes (QoLIs) combine multiple dimensions, such as health, economic status, education, environment, and social factors, into a single, interpretable metric, allowing for a holistic assessment of well-being (Ferrans and Powers, 1992; Katumba et al., 2022). They are valuable tools that enable governments and organisations to monitor progress, identify areas in need of intervention, and evaluate the impact of policies on population well-being (Hagerty, 2001; Gomonov et al., 2021; Ratner et al., 2022; Mkrtchyan et al., 2025). Furthermore, by standardizing diverse indicators, QoLI facilitates comparisons between different regions, countries, or demographic groups, thereby highlighting inequalities and trends over time. However, although existing QoL indices provide valuable information, they are often insufficient due to their limited scope, methodological weaknesses, lack of sensitivity to context, and static nature (Barnett, 1991). For instance, indices focusing on economic indicators frequently overlook the value of non-market activities, such as unpaid care work, volunteering, and community involvement, despite these contributing significantly to social well-being. Early versions of the Human Development Index (HDI), for instance, focused primarily on objective indicators such as life expectancy, education levels, and income. While these are important, they do not capture individuals' subjective experiences and perceptions (Ramkissoon et al., 2025). Furthermore, indices

often aggregate data at the national level, masking significant variations within countries. For instance, an index may indicate a high quality of life overall but fail to reveal disparities between urban and rural areas, or between different ethnic groups. The primary aim of this paper is to analyze existing methods of assessing the QoL and to propose a comprehensive and flexible model for its evaluation. The issue of study is that there is a lack of a comprehensive, empirically validated, and reproducible index for measuring Quality of Life that (1) integrates a balanced set of objective multidimensional indicators, (2) applies data-driven statistical weights, and (3) enables consistent comparison across countries and over time. This gap results in fragmented assessments, methodological inconsistencies, and limited policy applicability of existing QoL measures. Specifically, the authors seek to develop a complex index that integrates multiple indicators across economic, social, demographic, and environmental sectors. The research questions of this paper focus on understanding and improving the assessment of the QoL:

Q1: What are the main criteria and principles for assessing the QoL of populations across different countries?

Q2: How can existing methodologies and indices be improved or combined to develop a more accurate, multidimensional assessment tool?

Q3: What indicators from economic, social, demographic, and environmental sectors should be integrated into a unified complex index for evaluating QoL?

The study uses a combination of quantitative statistical methods, such as factor analysis, and qualitative assessments and data analysis to develop, normalise, and weight multidimensional indicators. This leads to the creation of comprehensive, adaptable indices for assessing population quality of life. The proposed QoLI was calculated for Armenia, Iran, Georgia, Moldova, Albania, and Azerbaijan for the period 2012–2021. This study proposes a comprehensive, multidimensional, and empirically validated Quality of Life Index (QoLI) to address gaps in existing literature. The QoLI integrates economic, social, and demographic indicators (e.g., life expectancy, education, poverty, innovation) for a holistic assessment, overcoming limitations of purely economic indices. It employs factor analysis for statistically justified, objective, and transparent indicator weighting, avoiding arbitrary assignments. Constructed using 10-year panel data

(2012–2021) from 100 countries with consistent normalization, the QoLI enables robust longitudinal and cross-country comparisons for benchmarking and policy evaluation. Finally, designed for practical policy application, its clear sub-indices (economic, social, and demographic) facilitate targeted social and economic interventions.

Literature review

For a long time, the welfare of society was characterized only by economic indicators, which focused solely on individual needs. Scientific research on this issue has been ongoing since the 18th century. In all studies, the standard of living was chosen as the fundamental concept, with its various interpretations. The standard of living reflects the volume and structure of consumption, social production conditions, the level of development of the service sector, how non-working time is spent, and the size of individual property. This broad definition describes the socio-economic situation of the population. In a narrower sense, the standard of living is defined as the level of need satisfaction and the corresponding income. The concept of 'quality of life' as an economic category was first introduced by economist Z. Helbert in his 1960 book *The Society of Abundance* (Zhalnina and Gerasimov, 2006). In politics, the term was introduced by US President J. Kennedy, in his State of the Union address in 1963, in which he commented that 'the quality of American life must keep pace with the quantity of American goods' (Khadzhalova, 2014). According to Eric Allard, quality of life is achieved through the satisfaction of three basic need systems: 'to have', 'to love', and 'to be'. Consumer needs are defined as the material conditions necessary for survival and for avoiding poverty (Allardt, 1993). Subbeto describes quality of life as comprising the quality of material, socio-cultural, environmental, psychological, and demographic characteristics of life (Subbeto, 2012). Sen proposed two concepts of living standards. One is the concept of the actual level of human life, i.e., the standard of living (Sen, 1993). This is understood as a set of activities and aspects of existence that are inherent in a person's life at a given moment or during a given accounting period. The other reflects the totality of possible and available lifestyles open to a person at a given moment in time, from which they can choose one to become their actual lifestyle, characterised by the first concept of liv-

ing standards (Poduzov, 2008). Reidulf et al. reported that a person's quality of life is determined by how much they utilise the real opportunities in their life. Feeling content and achieving benefits are two components of that satisfaction (Arnout, 2023). In modern conditions, quality of life is primarily an effective tool for implementing the state's social and economic policy (Ramkissoon et al., 2025). Social policy means the relationship between social groups through the full preservation and change of the social status of the population, as well as the creation of classes, strata, socio-democratic, socio-professional groups, and social communities (family, people, city, village) (Hagerty et al., 2021). The modern interpretation of the concept of "quality of life" emerged after World War II. Initially, it emphasized the idea that "*a good life is more than material abundance, and contains some factors, such as employment, life, environment, health, culture, etc*" (Nussbaum and Sen, 1993). Quality of life is a set of indicators that characterize the general well-being of people, which includes the level of material consumption (standard of living), as well as the direct consumption of non-purchased goods. QoL is a non-standard category. QoL is best understood as representing the gap between one's actual functional level and one's ideal standard (Cella, 1994). Quality of life, as a rule, is associated with financial security, unity with nature, responsibility to future generations, and other aspects. Each theory offers different interpretations of quality of life. The main approaches to the study of quality of life are:

Theory of ideals. According to this theory, the quality of life includes the realization of certain ideals (Khadzhalova, 2014). According to Maslow, the self-expression of an individual can be considered an ideal.

1. *Individual utility theories* focus on feelings of happiness, pleasure, and the fulfillment of desires. Many economists have called this approach "welfarism", social philosophers - "utilitarianism" or even "hedonism". This approach is often criticized by Third World researchers who, based on the experience of their own countries, claim that people are often able to adapt to inhumane living conditions (Amartya et al., 1993).
2. *Abundance theories* focus on manufactured goods, real incomes, etc. Thus, many economists seek to evaluate the QoL in terms of living standards. Efforts have been made to de-

velop methods for estimating income, but this approach has rightly been criticized by many researchers for highlighting its inability to explain lifestyle changes. For example, hippies can be considered happy, cheerful people who have no desire to acquire property. They can be happier than people who pursue a work ethic and have accumulated great wealth.

3. *Theory of basic human needs.* According to Eric Allard, QoL is achieved through the satisfaction of three systems of basic needs: “to have”, “to love”, “to be”. Consumer needs are defined as material conditions for survival and poverty alleviation. These include economic resources (minimum per capita income), living conditions, employment, working conditions, health, education, etc.

QoL is defined by the WHO as “individuals’ perceptions of their position in life in the context of the culture and value systems in which they live and about their goals, expectations, standards and concerns” (WHO, 1998). Quality of life is defined as the set of non-financial, non-monetary attributes of individuals, which co-determines their life chances and opportunities in life and has value in different cultures and contexts (OECD, 2011). To clarify the concept of “QoL”, it is very important to describe and reveal the objective and subjective aspects of QoL (Makaryan and Babayan, 2010). There are two main approaches to assessing the quality of life of the population: American and Scandinavian (Thorburn, 2014). The latter differ in their position on Campbell’s assertion that “the quality of life must be viewed through the eyes of an eyewitness” in terms of the relative importance of objective and subjective indicators of social welfare. Early American work focuses on objective indicators of health, poverty, and unemployment, which represent social facts regardless of individual assessments. In modern scientific and research fields, there is almost a consensus in the sense that the objective and subjective aspects of quality of life need to be studied together, taking into account the strengths and weaknesses of each. An example is the so-called EUROMODULE (The Euromodule, 2001), which is a Mediterranean research initiative involving research teams from 19 European countries. It collects comparative data on living conditions, well-being, and quality of life based on national sociological surveys, giving equal weights to objective and sub-

jective indicators, considering them “two sides of the same coin”. In addition, many models combine the objective and subjective quality of life domains. For example, Deiner argues that “every science should borrow information from other fields on the QoL”. A comprehensive understanding of subjective well-being requires taking into account the objective circumstances or conditions, the environment that influences people to value their lives. Similarly, a full understanding of objective indicators and their choice requires a thorough study of people’s values and information on how objective indicators affect people’s well-being. Brock points out that while the first concept of quality of life is related to social indicators in the social sciences, the second is connected with the tradition of subjective well-being in the behavioral sciences (Brock, 1993). QoL in the age of globalization is affected mainly by the state of the environment and economy. The subjective needs of people come to the forefront of their hierarchy of needs. Besides all the different definitions, Epley & Menon (2008) opined that “QoL has become a potential marketing tool for cities around the world (Hajduová et al., 2014). Currently, scientists distinguish three approaches to assessing the QoL of the population (Khadzhalova, 2014): 1) objective, 2) subjective, and 3) complex. The objective approach is based on a system of statistical indicators that describe people’s living conditions (income level, unemployment, crime, and environmental pollution, for example) without including data from public surveys. Objective indicators reflect values that can be measured quantitatively; examples include Gross Domestic Product (GDP) per capita, income level, and unemployment rate. According to international comparisons, one of the most widely used objective indicators is the HDI. The subjective approach is based on social surveys that reflect people’s opinions and judgments about their lives. Although some researchers are sceptical about assessing subjective indicators, current research shows that measuring subjective components of QoL is reliable and accurate. This approach focuses on internal evaluation, i.e., self-assessment of the quality of human life. Ed Diener introduced the concept of Subjective Well-Being (SWB), encompassing life satisfaction, positive moods, and the absence of negative moods. He argues that these subjective experiences are central to assessing an individual’s QoL (Diener, 1984). A complex approach to QoL assessment in-

volves combining and applying objective and subjective methods. The most common approaches are the objective approach and the complex approach. The integral approach assumes that objective and subjective indicators are equivalent. However, the question of how to calculate an integral assessment — that is, how to build an index that combines both objective and subjective assessments — remains unanswered. (Spiridonov, 2010).

Based on the provided literature review, a key hypothesis can be formulated that addresses the evolution and current understanding of quality of life (QoL):

H1: A person's overall quality of life is determined by the interaction between objective socio-economic conditions (such as income, employment, and access to resources) and their subjective perception of well-being (such as personal satisfaction, happiness, and life goals). Therefore, the integral QoLI may strongly but not perfectly correlate with HDI, indicating added informational value.

H2: QoLI is influenced by non-economic factors (social and demographic) beyond GDP per capita.

H3: QoLI responds to global shocks (e.g., 2020 pandemic) with measurable variations across countries.

MATERIALS AND METHODS

In recent years, various international organisations, statistical services, non-governmental organisations, independent research organisations, and authors have focused on developing and choosing the right methodology for assessing the quality of life. Since 2010, the Institute for Political and Sociological Consulting (IPSC) (<http://ipsc.am/am>) has commissioned a survey of the QoL index of the Armenian population in Armenia. There are two main approaches to assessing the quality of life of a population: The American approach and the Scandinavian approach. The latter are distinguished by their stance on Campbell's formulation, which states that "QoL should be considered through the eyes of an eyewitness", i.e., according to the relative importance of objective and subjective indicators of social well-being (Bliss, 1993). To comprehensively assess quality of life in Armenia, this research emphasises the importance of creating a composite quality of life index. The conceptual model is based on Sherlock's approach to methodological pluralism and systems synthesis. This allows different areas of an individual's life and different perspectives on their situation to be combined into a single index

(Makaryan and Babayan, 2010). The first stage of the study involved the use of descriptive statistics to evaluate the pros and cons of each QoLI. Additionally, specific normalisation and index formation methods were employed to compile the indices. On the second stage, we propose a new method of assessing the quality of life based on sub-indices. This method is a set of basic indicators that characterize the QoL, which are typical of the economic, social, cultural, and demographic characteristics of the country (Table 1)

In constructing the QoLI, we applied factor analysis to derive the weights for each indicator within the Economic, Social, and Demographic sectors. This statistical technique was selected for its ability to reduce dimensionality and identify latent factors that explain the maximum variance in a set of observed variables. All the weights mentioned in the indices were given based on the more accurate description and significance of the economic, social, educational, scientific, and environmental spheres, as well as taking into account the expert assessments. This study applies a quantitative, data-driven approach to construct a multidimensional Quality of Life Index (QoLI) for 100 countries over the period 2012–2021. A set of economic, social, and demographic indicators was selected from reputable international databases (World Bank, UNDP, OECD, Numbeo). Data were pre-processed by adjusting indicator directionality, imputing missing values, and normalizing values to a 0–1 scale to ensure cross-country comparability. Factor analysis (principal component method with varimax rotation) was employed to derive objective statistical weights for each indicator within its respective domain. Three sub-indices—Economic, Social, and Demographic—were constructed as weighted sums of normalized indicators. A second-level factor analysis determined the weights for combining these sub-indices into the final composite QoLI. The methodology was validated by examining correlations with the Human Development Index (HDI), partial correlations controlling for income, rank robustness tests, and sensitivity analyses. This ensures that the proposed QoLI captures multiple dimensions of well-being, provides reliable cross-country comparisons, and offers practical insights for policymakers.

RESULTS AND DISCUSSION

Comparison of QoL indexes

In 1975, a group of scientists led by M. Morris developed the *Physical Quality of Life Index (PQLI)*,

Table 1: Relevant indicators taken from three sectors

Economic indicators		Social indicators		Demographic indicators	
GDP per capita (current US\$)	GDP	Unemployment, total (% of total labor force)	UnEmp	Growth of population (thousands)	GP
Manufacturing, value added (% of GDP)	MF	Government expenditure on education, total (% of GDP)	GEE	Infant Mortality Rate (infant deaths per 1,000 live births)	IMR
Competitive Industrial Performance Index (CIP)	CIP	Households and NPISHs final consumption expenditure (% of GDP)	HFCE _{pc}	Life expectancy at birth, total (years)	LE
Annual growth of GDP per employed person, %	AG _{GDP}	Households and NPISHs final consumption expenditure (% of GDP)	HFCE	School enrollment, primary (% gross)	SEP
Gross fixed capital formation (% of GDP)	GFCF	Total natural resources rents (% of GDP)	TNRR	Total net enrolment rate by level of education (%)	TERE
Services, value added (% of GDP)	SV	Prevalence of undernourishment (% of population)	PUnN	Net Migration Rate (per 1,000 population)	NMR
Consumer price index	CPI	\$3.65 a day share of the population in poverty	ShPP		
Exports of goods and services (BoP, current US\$)	EGS	Gini coefficient			
High-technology exports (% of manufactured exports)	HTE				
Global Innovation Index (GII)	GII				

which includes the following partial indexes: Life expectancy up to one-year, infant mortality rate, and the level of literacy of the adult population. The values of the partial indicators are compared with the selected base: infant mortality - 7 ppm, average life expectancy - 77 years, literacy - 100%. Then the scores for each indicator are calculated: 1 (worst) and 100 (best). The gross index is the arithmetic mean of the scores obtained. The advantage of this index is its simplicity and the ability to make Mediterranean comparisons. PQLI is often used at the macroeconomic level to assess the level of physical health and human well-being. The PQLI calculation formula is:

$$PQLI = \frac{LR + IMR + LE}{3}$$

LR - literacy level, *IMR* - infant mortality rate per 1000 live births, *IMR* = (166 - infant mortality rate) * 0.625, *LE* - life expectancy index, *LE* = (infant mortality rate - 42) * 2.7.

The *PQLI* quality of life ratios were very simple, available only to estimate the minimum level of natural

needs, and used by the United States and the World Bank to assist developing countries. In recent decades, the UN Convention on Human Development has gained universal application and is often used as an objective method of assessing the quality of life (Ayvazyan et al., 2006). The HDI has become a more reliable indicator of social progress than GDP and many other measures. In today's rapidly changing world, living conditions, lifestyles, and behaviours, as well as perceptions of human development, are changing at an unprecedented rate. At the same time, the HDI more accurately reflects the complex nature of human development issues than poverty levels or public satisfaction measured in monetary terms. UN member countries measure HDI indicators (in whole or in part) and use these to compile and publish annual human development reports. Furthermore, the measurement of human development uses the HDI indicators developed by the UN and the constantly improving calculation methodology, including thematic areas. At the same time, the UN encourages countries to continuously improve the development of their accounting capabilities and methodology. The HDI is a summary of three separate indicators:

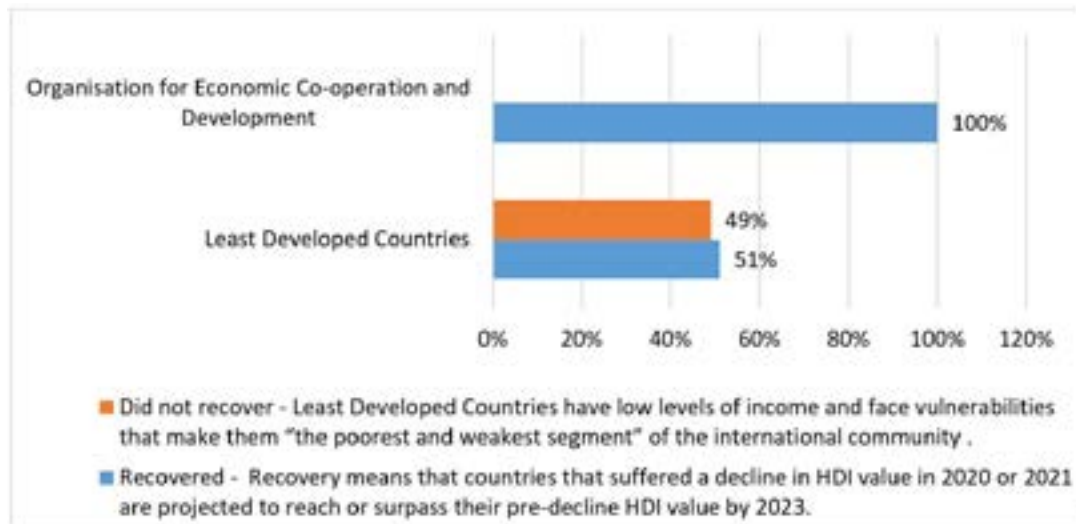


Fig. 1: Country recovery by 2023 from the HDI setback in 2020 or 2021 (Source: [Human Development Report 2023/2024](#))

life expectancy, education, and Gross National Income (GNI). The HDI represents the average geometry of the three normalized components of human development assessment: life expectancy, education, and gross national income. It is calculated as follows:

$$HDI = \sqrt[3]{LEI * EI * II},$$

where *HDI* - Human development index, *LEI* - life expectancy index, *EI* - education index, and *II* - gross national income index. The possible change range of the HDI is $0 \leq HDI \leq 1$. Its true size marks the rest of the way a country must go to reach the highest possible level of human development. The estimates in the UN Human Development Reports have included 170 countries since 1990 (now 195). Countries in the HDI are classified as "very high" (1.0 to 0.800), "high" (0.799 to 0.700), "medium" (0.699 to 0.550), and "low" (below 0.550) level countries ([Human Development Report, 2020/2021](#)). According to the results of 2022, among the 195 countries in the world with the highest HDI and the most prosperous are Switzerland, Norway, Iceland, Hong Kong, Denmark, Sweden, Germany, Ireland, Singapore, Australia, etc. Non-prosperous countries include Niger, Tanzania, Sudan, Afghanistan, Mozambique, Burkina Faso, Burundi, Chad, and the Central African Republic. The average life expectancy is the lowest in Lesotho and Chad, 53.0 years, and the highest in Monaco, 86.9 years. Liechtenstein has the highest GNI per capita

at \$ 146,673. South Sudan has the poorest population, with an annual per capita income of no more than \$ 691 ([Human Development Report 2023/2024](#)). The 2023 global Human Development Index value is projected to recover after the unprecedented drop in 2020–2021. For 2023, all OECD countries are projected to have reached or surpassed their pre-2019 HDI values, in contrast to only 49 percent of the Least Developed Countries (LDCs) ([Fig. 1](#)).

The disparity in recovery is also evident across HDI groups: 48 percent of low HDI countries, compared with 92 percent of very high HDI countries. This highlights the consequences of mismanaging interdependence in exacerbating inequalities in human development. The HDI does not consider distributions but averages, since a distribution-sensitive scalar measure could continue to involve some loss of information ([Anand and Sen, 1994](#)). Since 2006, the New Economic Foundation has developed a new criterion for assessing the ecological footprint, the Happy Planet Index (HPI). The World Happiness Report 2023 ranks 137 countries by how happy their citizens perceive themselves to be. The annual data for Finland has continued its modest but steady upward trend since 2014, so that dropping 2015 and adding 2018 boosts the average score, putting Finland significantly ahead of other countries in the top ten. The saddest people live in Afghanistan. Since 1961, the Organization for Economic Co-operation and Development (OECD) has been conducting research to develop the

Table 2: Top 10 cities with leading subcategories

Rank	Quality of Life	Leisure Options	Travel & Transportation	Health & Well-Being	Safety & Security	Environment & Climate
1	Valencia	Barcelona	Vienna	Abu Dhabi	Copenhagen	Lausanne
2	Copenhagen	Mexico	Prague	Vienna	Lausanne	Basel
3	Zurich	Madrid	Valencia	Doha	Geneva	Lisbon
4	Madrid	Miami	Madrid	Valencia	Basel	Zurich
5	Lisbon	Dubai	Dubai	Dusseldorf	Zurich	Vancouver
6	Dubai	New York	Abu Dhabi	Barcelona	Munich	Valencia
7	Vienna	Valencia	Singapore	Tokyo	Dusseldorf	Geneva
8	Abu Dhabi	Melbourne	Basel	Copenhagen	Lisbon	Stockholm
9	Lausanne	Lisbon	Lausanne	Madrid	Valencia	Vienna
10	Munich	Berlin	Zurich	Bangkok	Sydney	Sydney

best methodology for assessing the quality of life of its citizens. The OECD has spent almost 50 years, and already in 2019, this result is given in the OECD survey, which proposes to assess the quality of life rather than the traditional economic indicators (GDP, unemployment rate, inflation rate, etc.) through key indicators characterizing the well-being of other populations. The study defines well-being indicators (www.oecdbetterlifeindex.org): Income and Wealth, Housing, Work and Job Quality, Health, Knowledge and Skills, Environmental Quality, Subjective Well-being, Safety, Work-Life Balance, Social Connections, and Civic Engagement. This methodology was first studied in 34 OECD countries in 2011, and OECD partners Russia and Brazil. Across the indicators considered here, OECD countries with higher average current well-being also tend to be more equal, i.e., they have a lower share of people who are deprived, and there are smaller gaps in the distribution of well-being outcomes and fewer differences between population groups. Generally speaking, people in the Nordic countries, the Netherlands, New Zealand, and Switzerland enjoy both comparatively higher levels of current well-being and lower inequalities. On the other hand, people in Eastern European and Latin American countries, as well as Turkey and Greece, experience relatively lower levels of current well-being and are exposed to comparatively deeper inequalities. There are exceptions: Denmark performs better on inequalities compared to its well-being levels, while Austria, Korea, and Germany are relatively unequal, given their average well-being scores (OECD, 2020). Another

comprehensive quality assessment of quality of life is offered by the authoritative International Living organization. In 2022, the *Expatriate Insider* survey includes the QoLI, which covers 21 rating factors across five subcategories: Environment & Climate, Health & Well-Being, Leisure Options, Safety & Security, and Travel & Transit. Expats were asked to rate each factor on a scale from one (very bad) to seven (very good). This resulted in a ranking of 50 cities with a minimum sample size of 50 respondents per destination (Table 2). The latter was first introduced in 2018. Respondents rate factors on a scale from one to seven (Expatriate Insider, 2022).

The highest-rated destination in the QoLI, Valencia, lands among the top 10 in all five subcategories, too. It does best in the Travel & Transit Subcategory (3rd). For example, expats in Valencia appreciate the affordability of public transportation (85% happy vs. 70% globally), as well as their travel opportunities (94% vs. 82% globally). The top 10 in the QoLI are dominated by several very distinct geographical regions. In Europe, Nordic capital Copenhagen (2nd) is the only outlier. The other European top 10 destinations are all located on the Iberian Peninsula or in the German-speaking countries. Apart from Zurich (3rd), three more cities in Austria, Germany, and Switzerland rank very highly here. The biggest strengths of Austria's capital, Vienna (7th in this index), are its outstanding results for Travel & Transit (1st) and Health & Well-Being (2nd). Another well-known international organization is *Numbeo*, the world's largest database that provides data on cities

Table 3: Comparative analysis of the QoL of the countries (Source: [Numbeo database website](#))

2021			2022		2023	
Rank	Country	QOLI	Country	QOLI	Country	QOLI
1	Switzerland	190.8	Switzerland	195.3	Netherlands	196.7
2	Denmark	190.0	Denmark	192.4	Denmark	194.7
3	Netherlands	183.3	Netherlands	185.4	Switzerland	193.6
4	Finland	182.8	Finland	185.0	Luxembourg	192.9
5	Austria	182.4	Australia	183.8	Finland	190.5
6	Australia	181.5	Iceland	182.3	Iceland	187.5
7	Iceland	179.1	Germany	180.3	Austria	185.8
8	Germany	176.8	Austria	179.2	Oman	184.7
9	New Zealand	175.8	New Zealand	176.8	Australia	183.0
10	Norway	173.6	Norway	176.4	Norway	182.7

and countries around the world. It provides up-to-date information on global living conditions, housing, health, crime, and, most importantly, publishes the quality of life assessed for countries each year. [Table 3](#) below provides a comparative analysis of the quality of life of countries over 3 years.

[Table 3](#) shows that Switzerland has been the leader in terms of QoL for many years, and only in 2023 it loses its position. In 2023, Netherlands is a leader in terms of quality of life, surpassing the results of the previous 2 years. In 2023, their positions improved in Luxembourg and Oman. Summarizing the above methods of assessing the quality of life, it can be said that none of them fully represents the real quality of life of the population. First of all, it should be noted that one of the most widely used objective methods, the HDI, which includes 4 indicators, can not fully describe the QoL of the population. The rest of the observed objective indicators – for example, Ecological Footprint - are considered specific indicators of QoL assessment and are less applicable compared to HDI. As for the observed subjective methods of QoL assessment, they are the results of quite accurate research and include the main subjective aspects of QoL. Of the complex methods, the Happiness Index is still widespread, but it does not include such important indicators as income, unemployment, education, and so on. Thus, we can confidently say that there is still no single integrated quality of life assessment indicator that can be used worldwide. It must be based on both objective and subjective approaches, and be flexible enough to be able to calculate it for a country

based on the economic, social, and cultural characteristics of the country.

Constructing new QoLI

Using the set of indicators from [Table 1](#) and data for 100 countries over three years for factor analysis, the following weights were obtained ([Tables 4 and 5](#)). To bring the 10-year economic, demographic, and social indicators of 100 countries down to a single common measure, we carry out normalisation. Then, with the normalised values of each indicator, we create sub-indices corresponding to the weights. With these sub-indices, which consist of three areas, we can compile a QoLI for the 100 countries over 10 years. The QOLIs estimated by this methodology, as well as the sector-specific indexes, are presented in [Table 6](#) for the Republic of Armenia.

Using the example of one country presented in [Table 6](#), it is possible to examine the QoL of the population in the Republic of Armenia. Focusing solely on Armenia's quality-of-life data from 2012 to 2021, we can see that the QoL score gradually increased from 0.321 in 2012 to a peak of 0.355 in 2018. This suggests an overall improvement during the earlier part of the period. However, after reaching its highest point in 2018, the score decreased to 0.337 in 2019, remaining lower at 0.353 in 2020 and 0.336 in 2021. This indicates that the country experienced a decline or volatility in QoL measures in recent years. Despite these fluctuations, the scores remained within a relatively narrow range (approximately 0.321 to 0.355), suggesting that while improvements and setbacks

Table 4: Weights for each indicator in the three sectors (Source: authoring)

Economic indicators	Weights	Social indicators	Weights	Demographic indicators	Weights
GDP	0.114	UnEmp	0.1454	GP	0.059
MF	0.115	GEE	0.0916	IMR	0.207
CIP	0.153	HFCE _{pc}	0.1290	LE	0.209
AG _{GDP}	0.033	HFCE	0.1417	SEP	0.163
GFCF	0.082	TNRR	0.1010	TERE	0.224
SV	0.135	PUnN	0.1647	NMR	0.138
CPI	0.052	ShPP	0.1585		
EGS	0.110				
HTE	0.056				
GII	0.150				

Table 5: Indexes with weights for QOLI (Source: authors)

Index	Weights
Economic Index (EI)	0.381
Social Index (SI)	0.213
Demographic Index (DI)	0.405

The QoLI is calculated as follows:

$$QOLI = 0.381 * EI + 0.213 * SI + 0.405 * DI$$

where **QOLI** - Quality of life Index, **EI** - Economic Index, **SI** - Social Index, **DI** - Demographic Index

And the sub-indices included in QOLI are calculated as follows:

$$EI = 0.114 * GDP + 0.115 * MF + 0.153 * CIP + 0.033 * AG_{GDP} + 0.082 * GFCF + 0.135 * SV + 0.052 * CPI + 0.110 * EGS + 0.056 * HTE + 0.150 * GII$$

$$SI = 0.1454 * UnEmp + 0.0916 * GEE + 0.1290 * HFCE_{per\ capita} + 0.1417 * HFCE + 0.1010 * TNRR + 0.1647 * PUnN + 0.1585 * ShPP + 0.0684 * GC$$

$$DI = 0.059 * GP + 0.207 * IMR + 0.209 * LE + 0.163 * SEP + 0.224 * TERE + 0.138 * NMR$$

Table 6: The quality of life index of the population in Armenia during 2012-2021 (Source: authors)

Year	EI	SI	DI	QOLI
2012	0.229	0.264	0.437	0.321
2013	0.240	0.244	0.465	0.332
2014	0.242	0.256	0.498	0.348
2015	0.241	0.267	0.489	0.347
2016	0.245	0.261	0.468	0.338
2017	0.242	0.259	0.494	0.348
2018	0.255	0.254	0.503	0.355
2019	0.251	0.228	0.476	0.337
2020	0.257	0.252	0.498	0.353
2021	0.234	0.225	0.491	0.336

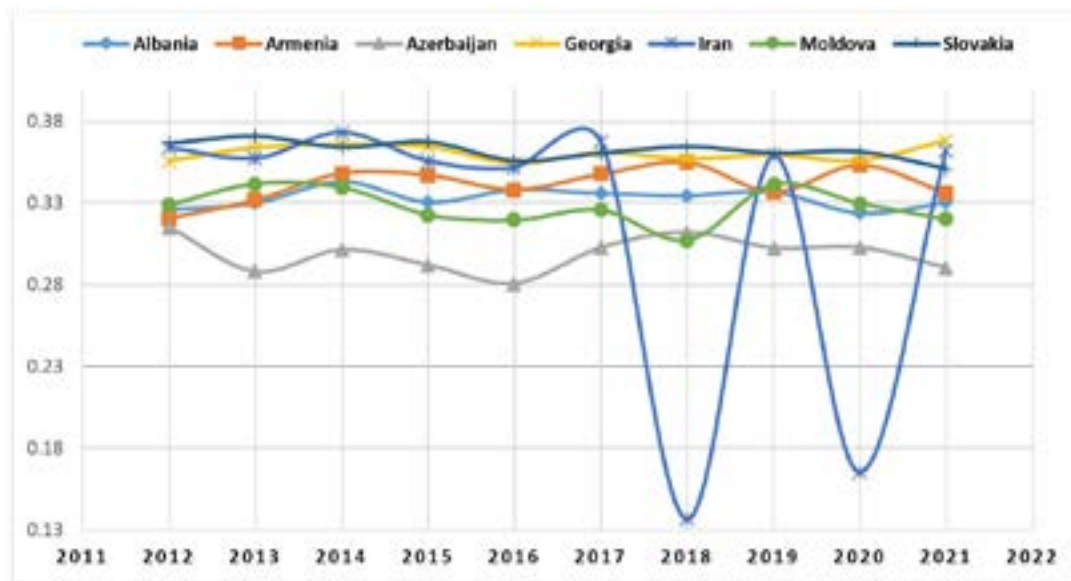


Fig. 2: Dynamics of the QoL of the population during 2012-2021 (%)

occurred, the overall level of quality of life remained moderately stable over the decade. In summary, Armenia experienced modest improvements in quality of life up until 2018, followed by a decline in subsequent years, suggesting potential challenges or fluctuations affecting quality-of-life outcomes during the latter period. As can be seen from Fig. 2, analyzing the quality-of-life scores from 2012 to 2021 for several countries reveals a few key observations: Georgia, Iran (except in 2018 and 2020), and Slovakia generally record higher scores (mostly around 0.35–0.37).

This suggests that, based on this metric, they tend to offer a relatively better QoL compared to the others. Armenia, Albania, and Moldova consistently show scores in the mid-range (roughly 0.32–0.35). Armenia, for example, fluctuates between about 0.321 and 0.355, placing it close to its regional peers. Azerbaijan's scores mostly fall between 0.28 and 0.31, indicating it consistently lags behind the other countries in this particular quality-of-life measure. Armenia's position in the mid-range shows that, while it does not rank at the top like Georgia or Slovakia, its performance is comparable to other post-Soviet or regional countries like Albania and Moldova. This comparison highlights both its progress and the areas where other countries might be setting higher benchmarks.

A step-by-step QoLI and HDI (Table 7) comparative analysis can be conducted for the specified countries. The results are summarized in Table 8. QoLI has

remained relatively stable over the years, with only minor fluctuations. There is a slight upward trend in most countries until 2017–2019, after which there is a dip in 2020 (likely due to the impact of the pandemic). The HDI consistently increases over time in all countries, indicating long-term improvements in education, income, and health.

In Armenia, QoLI fluctuates, peaking in 2018 (0.355) and 2020 (0.353). HDI rose from 0.751 (2012) to 0.774 (2021). HDI steadily improves, while QoLI suggests uneven living condition improvements, possibly due to political/economic volatility. In Georgia, QoLI is highest among Caucasus countries (around 0.36). HDI also improves consistently. Georgia maintains a higher perceived quality of life and development metrics. In Iran, QoLI is problematic: a sharp drop in 2018 (0.136) and 2020 (0.165). HDI, however, steadily improves. Severe internal issues (e.g., sanctions, inflation) reduce the QoL despite educational and healthcare progress. Slovakia is the highest in both QoLI and HDI. Serves as a reference country; consistently high on both indices due to EU membership, economic development, and strong institutions. In Albania, QoLI gradually increases from 0.326 to 0.336. HDI also rises from 0.73 to 0.765. Moderate progress, stable growth, but still lags behind Slovakia and Georgia in both indices. In Moldova, QoLI declined between 2014 and 2018 but recovered by 2019. HDI increases from 0.7 to 0.735. Moldova struggles more

Table 7: HDI scores of the countries

Year	Armenia	Georgia	Iran	Slovakia	Albania	Moldova	Azerbaijan
2012	0.751	0.745	0.742	0.845	0.730	0.700	0.735
2013	0.757	0.75	0.748	0.848	0.735	0.705	0.740
2014	0.764	0.755	0.754	0.850	0.740	0.710	0.745
2015	0.769	0.761	0.761	0.852	0.745	0.715	0.750
2016	0.773	0.766	0.766	0.854	0.750	0.720	0.755
2017	0.775	0.770	0.770	0.856	0.755	0.725	0.760
2018	0.781	0.777	0.776	0.858	0.760	0.730	0.765
2019	0.789	0.786	0.783	0.860	0.765	0.735	0.770
2020	0.769	0.778	0.774	0.858	0.760	0.730	0.765
2021	0.774	0.784	0.780	0.860	0.765	0.735	0.770

Table 8: General pattern across countries: Comparative analysis QoLI vs HDI

Country	QoLI Trend	HDI Trend	Interpretation
Armenia	Moderate, unstable	Steady upward trend	Institutional fragility and external shocks affect QOLI
Georgia	Strongest in the region	Consistent growth	Balanced, successful reforms
Iran	Sharp QOLI drops (2018, 2020)	HDI keeps rising	Sanctions/inflation reduce felt well-being
Slovakia	Highest in both indices	Very high HDI	Model of successful integration into the EU
Albania	Gradual QOLI improvement	Steady HDI growth	Stable development, but lags behind leaders
Moldova	Volatile QOLI, steady HDI growth	Lower overall, slow progress	Governance and migration issues hinder QoLI
Azerbaijan	Lowest QOLI, decent HDI growth	From 0.735 to 0.770	Inequality/governance issues reduce QOLI impact

with the quality of life (possibly due to migration and corruption), but human development slowly rises. In Azerbaijan, QoLI is lowest among these countries, but HDI goes from 0.735 to 0.77. Economic development supports HDI growth, but low QoLI may reflect inequality and governance issues. In general, some countries (like Iran, Azerbaijan) have high HDI but low QoLI — development isn't always felt in day-to-day life. Georgia and Slovakia maintain strong performance in both, indicating balanced development. The drop in QoLI around 2020 is consistent with the COVID-19 pandemic, affecting healthcare, the economy, and overall satisfaction. Post-Soviet countries (Armenia, Georgia, Moldova, Azerbaijan) show steady HDI improvement but variable QoLI, reflecting institutional reforms and uneven governance. Therefore, the proposed QoLI provides policymakers and international institutions with a more nuanced and actionable tool for assessing population well-being.

By decomposing the index into economic, social, and demographic sub-indices, governments can pinpoint the specific domains (e.g., healthcare, education, or labor market conditions) that most affect national or regional QoL scores. Moreover, the panel-based structure of the index allows countries to track progress or decline over time, detect the impact of external shocks (e.g., pandemics, conflict), and benchmark their performance against peer countries. The transparent, data-driven weighting scheme enhances the credibility and usability of the index for policy evaluation, budget planning, and strategic development goals (e.g., SDGs, national welfare strategies). This research makes three key contributions:

1) From a theoretical perspective, the study reconceptualises quality of life as a multidimensional construct, integrating economic, social, and demographic dimensions and moving beyond single-metric or subjective frameworks.

2) As a methodological contribution, the study introduces a transparent and replicable approach to constructing a composite index using factor analysis for objective weighting, panel normalisation for comparability, and validation methods for reliability.

3) The study's empirical contribution consists of delivering QoLI estimates for 100 countries over 10 years, comparing them to established indices such as the HDI and revealing disparities between economic development and lived well-being.

It's also important to acknowledge a couple of practical limitations of the QoLI. Firstly, it relies solely on objective indicators; consistent, comparable data for subjective well-being (like happiness or life satisfaction surveys) simply isn't available across all countries and years. Secondly, while we performed extensive robustness checks, the index's structure and factor analysis results might still be sensitive to choices made during missing data imputation and country selection.

Speaking about future research direction, we believe the QoLI framework could be significantly enhanced by future research focusing on these key areas:

- integrating reliable subjective well-being indicators to enable a more holistic assessment;
- extending the index to sub-national levels to capture intra-country disparities, particularly in developing economies;
- exploring advanced weighting and variable selection methods (e.g., Bayesian model averaging and machine learning) to increase robustness;
- developing an online platform for real-time visualisation to improve accessibility for diverse stakeholders.

CONCLUSION

Therefore, it is clear that no single integral indicator for assessing the quality of life can be applied worldwide. This is because it would not provide a complete picture of the well-being and living conditions of the population. The necessary indicator should be based on both objective and subjective approaches and be flexible enough to be adapted to a particular country based on its economic, social, and cultural characteristics. To more accurately characterise the quality of life of populations in different countries, our QoL assessment method allows us to identify quality of life

dynamics over time. Studying the international experience of quality of life, as documented by various research organisations, will enable us to gain a clearer understanding of the changes countries have implemented and identify prospects for further development. Having studied the issues necessary to achieve the goal set out in the article, we have come to the following conclusions: QoL, as an economic concept, expresses the totality of the population's material and non-material satisfactions. QoL is determined by both objective criteria, such as life expectancy, crime rate, unemployment rate, GDP, and poverty rate, and subjective criteria, such as happiness, life satisfaction, family relationships, and job satisfaction. The QoL of the population is difficult to assess quantitatively, as characteristics such as health, work safety and conditions, culture, and the satisfaction of citizens' spiritual needs are not easily quantifiable. Therefore, a combination of quantitative and qualitative characteristics and general sociological assessments is necessary. The study proposes assessing the QoL in countries using the above methodology, which involves constructing a complex indicator using the most appropriate indicators of the economic, social, and demographic spheres. This will enable policymakers to observe the dynamics of QoL in countries in comparison. The findings reveal that QoL cannot be effectively captured by relying solely on traditional economic measures. The developed QoLI offers a more comprehensive assessment by combining multiple domains and applying statistically derived weights through factor analysis. This approach ensures greater objectivity, transparency, and cross-country comparability, thus providing new insights into the dynamics of population well-being. The study contributes to the literature by proposing a replicable methodology that directly addresses the research questions: identifying the main criteria for assessing QoL across countries (RQ1), improving the methodological framework for constructing composite indices (RQ2), and determining which multidimensional indicators most strongly shape QoL differences globally (RQ3). The results highlight the added value of multidomain integration and data-driven weighting, demonstrating that QoL outcomes are influenced not only by economic growth but also by health, education, and demographic factors. From a practical perspective, the QoLI allows policymakers to decompose results by domain, identify the key drivers of well-being deficiencies, and design targeted interventions. This provides a solid evidence

base for monitoring progress towards sustainable development goals and improving the effectiveness of social and economic policies. Answering the research questions of the paper, we can mention the following. In answering the research questions posed in this paper, the following can be noted.

RQ1: The analysis confirms that quality of life (QoL) is a multidimensional construct that cannot be accurately assessed using economic indicators alone. While GDP per capita and other economic metrics are significant, they only partially explain differences in population well-being. Including demographic indicators (e.g., life expectancy, infant mortality, and net migration rates) and social indicators (e.g., education enrolment, poverty prevalence, and household consumption) significantly enhances the explanatory power of QoL measurements. This finding supports a broader conceptualisation of QoL that reflects not only material prosperity, but also social development and population health.

RQ2: The study demonstrates that factor analysis provides a statistically robust and transparent method of weighting indicators within each QoL domain, thereby avoiding the use of arbitrary or expert-based assignments. By applying panel-wide normalisation and constructing domain-specific sub-indices, the QoLI offers greater comparability over time and across countries than existing indices such as the HDI or HPI.

RQ3: The findings suggest that demographic and social factors, particularly life expectancy, infant mortality rates, educational enrolment, and poverty prevalence, strongly influence variations in QoL between countries. In some cases, these factors exert a greater influence on the QoLI than purely economic measures do, thereby highlighting the limitations of GDP-centric evaluations of development. Furthermore, time-series analysis revealed that QoLI scores were sensitive to external shocks. For example, many countries experienced a decline or stagnation in QoL during the 2019–2021 period, reflecting broader social and health crises beyond income changes. While the proposed framework represents a significant advancement over existing indices, the study acknowledges certain limitations, such as the lack of subjective well-being data and sensitivity to missing values. Future research should build on these results by extending the index to regional levels, incorporating subjective indicators where available, and testing alternative weighting techniques to enhance robustness.

AUTHOR CONTRIBUTIONS

A. Ktoyan performed the literature review, developed the methodology, analysed and interpreted the data, and prepared the manuscript. A. Shirinyan conducted the literature review and compiled the data for the manuscript. M. Harutyunyan assisted with the literature review, data curation, and manuscript preparation. B. Gabrielyan performed calculations and data visualization and edited the manuscript.

CONFLICT OF INTEREST

The authors declare no potential conflict of interest regarding the publication of this work. In addition, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancy, have been completely witnessed by the authors.

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ABBREVIATIONS (NOMENCLATURE)

AG_{GDP}	Annual growth of GDP per employed person, %	<i>NMR</i>	Net Migration Rate (per 1,000 population)
<i>CIP</i>	Competitive Industrial Performance Index	<i>OECD</i>	Organisation for Economic Cooperation and Development
<i>CPI</i>	Consumer Price Index	<i>PQLI</i>	Physical Quality of Life Index
<i>DI</i>	Demographic Index	<i>PUnN</i>	Prevalence of undernourishment (% of population)
<i>EF</i>	Ecological Footprint	<i>QoLI</i>	Quality of Life Index
<i>EGS</i>	Exports of goods and services (Balance of payments (BoP), current US\$)	<i>SEP</i>	School enrollment, primary (% gross)
<i>Ecl</i>	Economic Index	<i>ShPP</i>	\$3.65 a day share of the population in poverty
<i>EI</i>	Education Index	<i>SI</i>	Social Index
<i>GDP</i>	Gross Domestic Product per capita (current US\$)	<i>SV</i>	Services, value added (% of GDP)
<i>GEE</i>	Government expenditure on education, total (% of GDP)	<i>SWB</i>	Subjective Well-Being
<i>GFCF</i>	Gross fixed capital formation (% of GDP)	<i>TERE</i>	Total net enrolment rate by level of education (%)
<i>GII</i>	Global Innovation Index	<i>TNRR</i>	Total natural resources rents (% of GDP)
<i>GP</i>	Growth of population (thousands)	<i>UnEmp</i>	Unemployment, total (% of total labor force)
<i>HDI</i>	Human Development Index		
$HFCE_{pc}$	Households and Non-profit institutions serving households (NPISHs) final consumption expenditure (% of GDP)		
<i>HFCE</i>	Households and Non-profit institutions serving households (NPISHs) final consumption expenditure (% of GDP)		
<i>HPI</i>	Happy Planet Index		
<i>HTE</i>	High-technology exports (% of manufactured exports)		
<i>II</i>	Gross National Income Index		
<i>IMR</i>	Infant mortality rate		
<i>IPSC</i>	Institute for Political and Sociological Consulting		
LDC_s	Least Developed Countries		
<i>LEI</i>	Life expectancy index		
<i>LR</i>	Literacy level		
<i>MF</i>	Manufacturing, value added (% of GDP)		

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