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THE RESULTS OF THE CLUSTER AND FACTOR ANALYSIS OF THE LIVING STANDARDS OF THE RA HOUSEHOLDS¹

Based on the results of the comprehensive survey of the living standards of households in Armenia, this research aims to identify and evaluate the socio-economic situation of households and the country in general, as well as to provide a more detailed and clear understanding of the state of the population's living standards, intending to improve relevant policies and programs. The research used the SPSS statistical package

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through cluster and factor analysis. The application of this analytical tool provides an opportunity to identify the main groups that are most vulnerable and, therefore, need more focused and targeted solutions in support programs of both the governmental and other non-governmental stakeholders. Through the latter, it is also possible to better understand the needs of households, regardless of their income level, spending structure, or consumption behavior. The socio-economic conditions of households in Armenia differ greatly according to regions and clusters. Some regions (Yerevan, Kotayk, Syunik) are more prosperous, while the poverty level remains high in the most vulnerable areas (Shirak, Vayots Dzor, Tavush).

Regional disparities require targeted policies to strengthen social protection and equalize economic opportunities for different communities.

Keywords: *living standards, incomes, expenditures, consumption, inequality, clusters*

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INTRODUCTION. One of the indicators of the effectiveness of the state's economic policy, and in particular, fiscal policy, is its inclusiveness. The geopolitical developments of recent years, the pandemic, and its socio-economic consequences have caused serious changes in the structure of economic development. The significant increase in income inequality observed in developed and developing economies and the severe consequences of the global economic and financial crisis make distributional issues a priority for economic policy. It is up to governments to address concerns about rising inequality while promoting economic efficiency and more sustainable economic growth. The Republic of Armenia is no exception in this regard. The economic developments of the previous years have had a positive impact on economic growth and various indicators characterizing the living standard of the population, but there remains great uncertainty regarding the higher potential formed as a result of the situation. On the other hand, the economy's structure, the inequality of income distribution, and the uneven territorial developments create problems for ensuring the inclusiveness of economic development. In this sense, the analysis of the living standard and its stratifications is relevant both from the point of view of scientific and policy development. Based on the results of the integrated survey of the living standards of households in Armenia, the cluster analysis carried out within the framework of the study aims to identify and evaluate the socio-economic situation of households and the country in general, as well as to provide a more detailed and clear understanding of the living standard of the population to improve relevant policies and programs.²

² Anonymized micro database of the Comprehensive Household Living Standards Survey (by household), <https://www.armstat.am/en/?nid=205>

The tool's application allows for the identification of particularly the most vulnerable groups, which, therefore, need more focused and targeted solutions from the government and other interested non-governmental support programs. This makes it possible to better understand households' needs, regardless of their income level, spending structure, or consumption behavior.

LITERATURE REVIEW. Foreign and domestic researchers have highlighted and discussed the problems of economic inequality. Toplewski and others devoted their research to analyzing the living standards of the EU countries and studied the differences in the living standards of the population in different European Union countries (Topolewski & Topolewska, 2023).

Differences in living standards are an obstacle to the integration processes, which the authors emphasize in the case of the countries that joined the EU in 2004. The authors try to find out the purpose of the EU economic policy. In the research with the constructed synthetic model, an attempt is made to measure the living standard, taking into account various vital aspects. Considering the values of the synthetic variable, the authors claim that, on the one hand, the living standard in countries increases, and on the other hand, inequality between countries decreases. Therefore, the authors claim that the economic policy conducted by the European Union is achieving the intended result.

M. Modijongo et al., in their research, analyze the factors that account for informal economic inequality between African countries, both developed and developing economies. The study covers a survey of 84 nations, including 44 African countries, between 1995 and 2015. According to the authors, econometric results from previous studies show that, on average, the level of informality in an African country's economy is greater than that of developed and developing countries (OECD+). Raising the population's living standard, improving corruption control, and strengthening financial development can enable African countries to reduce this gap. However, fiscal freedom, technological infrastructure, trade liberalization, and political stability increase, and human capital and technological infrastructure reduce the overall gap (Mpabe et al., 2024).

In M. Dekina and A. Makarov's work, the indicators of the living standard of the population in the Russian Federation are analyzed in the context of territorial features, taking into account the influence of various factors. The research shows that territorial features resource saturation, infrastructural development, and disproportionalities of government spending can significantly impact the standard of living (Dekina et al., 2024).

During the analysis of the living standards of individual regions in Cameroon, P. Togum and other authors pay attention to the impact of decentralization processes on the leveling of differences in living standards in different regions. The results reveal the difference in the formation of income

levels between different areas of Cameroon, which makes the hypothesis of inequality of living standards more likely. In addition, plotting the standard deviation of regional GDP reveals relative convergence at specific dates. Tests for sigma convergence confirm the presence of a random trend, which supports significant differences in living standards between regions of the country. The beta convergence estimate indicates a regional convergence process but is not statistically significant. The authors conclude that there is no inequality mitigation process in Cameroon. The study recommends developing a resource transfer mechanism based on their level of development and factor endowment, encouraging local authorities to use innovative mechanisms for attracting resources, such as crowdfunding (Tegoum et al., 2024). In another study, which focuses on the structure of income and expenditure of the rural population in Ukraine and its impact on the living standard, the authors note that despite the positive dynamics of wage growth, its level in the agricultural sector remains very low. The increase in the share of expenses on non-food products characterizes the improvement of the living standard of rural households. However, the living standard of rural households is low. The low wages of the working-age population, cultural and household needs, and underdeveloped infrastructure negatively affect the living standard of the rural population and lead to their migration to the city, which negatively affects the demographic situation in the village. According to the authors, Russia's war against Ukraine led to a deterioration in the living standard of households. The decrease in income and the increase in household expenses were influenced by job loss, stable income, forced unplanned expenses and population migration, life-threatening danger, and fear (Natalia Gerasymchuk, Oksana Pashchenko, Olena Zharikova, 2023). Pelayo Moricel and others attempt to analyze the impact of government trade policy decisions in developing economies. According to the authors, they affect economic growth and human development. The analysis is based on panel data from 53 developing countries in Latin America and Asia from 2013 to 2022. The results show that economic freedom has a non-significant direct effect on human development. The study is important in assessing the impact of policy decisions on living standards (Pelayo-Maciel et al., 2023).

Among domestic researchers, R. Ghazaryan, who in his work dealt with the analysis of the development, living standards, and inequality of the population of the RA, EAEU, and neighboring countries, performs a comparative analysis and evaluations of the indicators of development, inequality and living standards of the RA, EAEU and neighboring countries (Ghazaryan, 2022). Through analyzing the group of indices offered by the United Nations Development Program, the author tries to find out the main trends of the changes in health, education, and income indices and discuss their reasons. The analysis compares the causes of development in terms of women and men and the consequences of inequality between them. In another study dedicated to the study of income distribution inequalities, the same author presents the estimates of income inequality in

Armenia and the sources of income that form it. The author uses the Gini coefficient calculated for each source of income from 2004 to 2014. Using different sources of income, he decomposes the Gini coefficient for total income in an attempt to gain insight into the factors influencing inequality. The bulk of inequality is in wages, but it is offset by the combined marginal effects of pensions and government transfers. For example, a ten percent increase in wages in 2014 raises the Gini coefficient by 1.3 percent, while a ten percent increase in pensions and government transfers reduces inequality by 1.4 percent. The author also cites concerns about the small value of capital income and the potential lack of information on high-wealth owners. Another concern relates to the measurement of wages and the inclusion of social security taxes paid by the employer (Ghazaryan, 2022).

RESEARCH METHODOLOGY. The research used the SPSS statistical package through cluster and factor analysis. The 2022 Comprehensive Household Living Conditions Survey database served as the basis for clustering.³

In particular, the basis for the research were the indicators collected from 5184 households separated by Yerevan and regions, which are: the volume of food and non-food products purchased by households per month in monetary terms, the volume of food consumed by households per month in monetary terms, household non-food gifts in AMD per month, household monthly expenses in AMD, household monthly monetary, non-monetary and total income volumes, income from wages, poverty level, educational level and the number of household members.

The reliability of cluster analysis mainly depends on two important factors: the choice of variables and the sample size. If we choose variables that do not reflect the differences between the data, the clusters may be formed incorrectly. Therefore, based on the problem of our research, variables, that are closely related to the objectives of the analysis and complement each other without unnecessary repetition, were selected. The sample size also has a significant impact on the reliability of cluster analysis. The 11 clusters formed as a result of clustering include several clusters consistent with the observations, which proves the absence of the above problem. The table below shows the number of cases (examples) included in each cluster (group). The clusters are significantly different in size, which is important for clustering analysis.

From the table, we can understand that the largest cluster is Cluster 1 with, 1992 households, which is about 40.1% of the total sample, the next largest cluster is Cluster 8, with 1145 households, which is 23% of the total sample. The third and fourth largest clusters are Clusters 6 and 3, with 566 and 563 households, respectively, and a cumulative share of 11.4% of the total. The

³ Anonymized micro database of the Comprehensive Household Living Standards Survey (by household), <https://www.armstat.am/en/?nid=205>

presence of households in the same cluster with such large volumes indicates the presence of similar living standard conditions in those same households. Meanwhile, some clusters include very few households, such as 9th (3 households), 4th (12 households), 10th (13 households), etc.

Table 1

Number of households included in clusters

<i>Cluster number</i>	<i>Number of included households</i>
1	1992
2	210
3	563
4	12
5	112
6	566
7	276
8	1145
9	13
10	54
11	16

ANALYSIS AND RESULTS. Now there is a need to study the centers of the formed clusters. Table 2 shows the cluster centers obtained as a result of cluster analysis using the SPSS statistical package. The rows of the table represent the centers of the relevant variables according to the different clusters reflected in the columns.

The cluster comprising 40% of households (Cluster 1) is characterized by relatively small families, which may account for lower costs and incomes. In this cluster, compared to the others, food expenditures are quite low (second lowest), and the total expenditure in monetary terms for a month is the lowest. Such a situation is, to some extent, due to the small number of family members, although it is also appropriate to note that this cluster lags behind the others in terms of income. In terms of monetary and non-monetary incomes and, in general, just incomes, the latter has a rather large gap compared to the rest of the clusters. If we calculate the volume of monetary income of this cluster per capita and compare it with the nominal monetary income per capita of the RA published by the Statistical Committee, we see that the latter is almost 1.6 times higher than the average of the cluster, amounting to 74,021 AMD.

On the contrary, the indicator of the cluster in terms of non-monetary income is quite higher than the national average, but the latter cannot have a significant impact on the total income. Moving on to the analysis of the costs of the cluster, we should note that the indicators of costs, like revenues, are inferior to other clusters. Comparing the nominal consumption expenses of households with the consumption expenses of the cluster, we notice that if the per capita expenses in the cluster are 39,307 AMD, then the average national indicator is 52,679 AMD. Summing up, we should mention that Cluster 1 stands out with a lower living

standard than the RA average, as per capita incomes are 1.6 times less than the national average, and expenses are 1.3 times less. If we consider the fact that 40% of the sample is included in this cluster, then this is a serious problem from the point of view of the socio-economic development of the RA.

Cluster 8, covering 23% of households, is characterized by a household with a larger number of family members, unlike the previous one. Expenditures on food, also based on the number of family members, are relatively higher than the previous cluster but remain low when compared to other clusters. The overall cost level is also higher than the previous cluster alone. Compared to the previous cluster, per capita monetary incomes are quite high, amounting to about 67,000 AMD, and are lower than the national average by 7,000 AMD.

Referring to Clusters 6 and 3 containing the third largest number of options, we must state that despite the similarity of the family sizes, their monetary incomes differ from each other. Specifically, if the monetary income per capita in Cluster 6 is 43% higher than the average monthly national indicator, then in Cluster 3, this indicator is almost 2 times lower than the average national indicator. Regarding non-monetary income, Cluster 3 also differs significantly from the families included in Cluster 6, but in this case, both clusters have a significantly higher result than the average republican one. It is also important to note here that Cluster 6, unlike Cluster 3, has a large source of income from wages. And while Cluster 3 is abysmally low, with the 2nd lowest result of the 11 clusters, Cluster 6 ranks the 4th highest, trailing only the smaller clusters 4, 2, and 9. As for costs, the existing gap between Clusters 4, 2, and 9 is not so great here. In particular, the index in Cluster 6 is equal to the national average, and in Cluster 3, it is 32% more than the national average.

Summarizing the results obtained from the clusters containing the largest sample listed, we must state that considering that these clusters cover 80% of the sample and more, and 40% of the sample's households stand out with unfavorable conditions both from the point of view of living standards and socio-economic development, some aspects of socio-economic policy need to be reviewed, which will provide an opportunity to improve these households' socio-economic status. Significant differences in household incomes and expenditures in Armenia also indicate socio-economic inequality.

The implemented policy's target should be to support the included households in the most vulnerable clusters to increase their incomes and ensure a more balanced standard of living.

Let us now turn to the characterization of the smallest clusters.

Cluster 4 includes medium-sized families with significantly higher incomes. Food costs are also high in this cluster. Cluster members have not only monetary but also significant non-monetary income. This means that families receive additional income not counted in the basic salary, such as gifts, support programs,

or other non-monetary rewards. Educational level is also high, making the process of receiving more income and spending more expenditures more likely.

Cluster 5 represents high-income families with a large family size and average spending on food. Households' non-cash incomes are also significant. This cluster shows that education and age experience can contribute to higher earnings. The cost of purchasing food in Cluster 6 is AMD 85055.66, which is higher than the costs of Clusters 1, 8, and 9 but lower than the costs of Clusters 3 and 4. We can characterize this cluster as a group of families with an average income, in which the income index is quite lower than the incomes of, for example, Cluster 5 (776254.44 AMD) and Cluster 4 (1415383.20 AMD). Non-monetary incomes in this cluster are also quite low compared to others.

Cluster 7 can be characterized as a sample with relatively high income and expenditures, implying a relatively good economic condition. In Cluster 8, total incomes are in the middle range, relatively higher than the data in Cluster 1 and Cluster 3 alone.

Cluster 9 and Cluster 11 are generally quite similar: high incomes, educational levels, and relatively high spending volumes. From the point of view of income, we should note that in the case of Cluster 9, compared to Cluster 11, the amount of non-monetary income is large, as well as from the point of view of expenses, the expenses incurred in Cluster 9 are almost twice as much, which can be evidenced by the fact that this cluster includes about higher living standards or greater financial demands of individuals.

Although Cluster 11 has roughly the same income, it exhibits lower costs, which may be related to more frugal spending behavior.

Table 2

Cluster centers

[illegible]

Now, let us look at the variation created by clustering. The analysis of variance presents a rather remarkable picture (Table 3). The ANOVA table is used in cluster analysis to analyze and validate cluster differences. It allows one to assess the extent to which variables contribute to the differentiation of clusters, which is very important for assessing the quality of the analysis. It helps analyze differences in mean values between clusters and assess whether these differences are statistically significant.

Table 3

Results of the significance test of the variables

ANOVA						
	Cluster		Error		F	Sig.
	Mean Square	df	Mean Square	df		
Number	2837887.970	19	2242232.774	4950	1.266	0.195
Number of the members of a household	282.284	19	2.771	4950	101.857	0.000
Food purchased by a household per month in dram	263269808472.472	19	1992617586.877	4950	132.123	0.000
Food consumed by a household per month in dram	11559198136.248	19	426002590.900	4950	27.134	0.000
Non-food purchased by a household per month in dram	186087145183.722	19	1221085218.857	4950	152.395	0.000
Non-food gifts of household per month in dram	1146447107671.740	19	1345300498.520	4950	852.187	0.000
Expenditures of a household per month in dram	3376458059186.590	19	5088824749.155	4950	663.504	0.000
The monetary income of a household per month in dram	14383538555330.100	19	4538134708.497	4950	3169.483	0.000
Total income of a household per month in dram	17692963205602.400	19	5080061898.585	4950	3482.824	0.000
Non-monetary income of a household per month in dram	1243360083230.770	19	1536018135.021	4950	809.470	0.000
Income from salary, including in-kind payment of a household per month in dram	9376914068343.780	19	5967338088.312	4950	1571.373	0.000
The educational level of the head of the hh	11.170	19	1.916	4950	5.829	0.000
Age of the head of the hh	2964.594	19	182.708	4950	16.226	0.000
Poverty	1.319	19	0.162	4950	8.152	0.000

From the observations of the latter, we can understand that for most of all variables, indicators within the clusters are quite different, because the coefficient of variation is quite high, which implies a sufficient differentiation of households in terms of these indicators, from which we can also conclude that the living standard of households in the RA is quite differentiated, which is a serious problem. It is also interesting to know the extent to which the applied independent variables were significant in the clustering process. According to the results obtained, 13 of the 14 observed indicators were significant.

However, no matter how differentiated the main indicators characterizing the living standard of the RA households are and how much the latter is mostly lower than the national average in the largest sample of households, we still consider that it is also important to observe the spatial distribution of these indicators. Therefore, let us reflect on how households are included in this or that cluster according to regions.

When looking at the clusters by region, we can conclude that the majority of the observations made in Lori, Shirak, Tavush, and Gegharkunik regions are included in Cluster 1 with 55%, 59%, 47%, and 45%, respectively. Households of Vayots Dzor, Lori, and Aragatsotn region have a relatively large share of Cluster 3 with proportions of 23%, 15%, and 14%, respectively. From this, we can conclude that most households in these marzes have a similar living standard. In Cluster 6, Kotayk, Syunik, and Ararat regions, as well as Yerevan, stand out according to the specific weight. Kotayk, Armavir, and Ararat regions have a particularly large share in Cluster 7 by share, with 32% and 29% share, respectively. In this cluster, Yerevan, Syunik, and Tavush regions also stand out with many observations. Kotayk, Syunik, Ararat, and Armavir regions and Yerevan also have the largest specific weight in Clusters 5 and 8.

Table 4

Composition of clusters by the RA regions

	Clusters											Total
	1	2	3	4	5	6	7	8	9	10	11	
Aragatsotn	115	12	42	1	9	37	22	65		6	2	311
Ararat	132	17	31		15	64	20	117		4	2	402
Armavir	148	11	43	1	11	43	29	122	1	4	1	414
Gegharkunik	135	11	28		7	27	7	77		4	1	297
Kotayk	68	19	10	1	12	79	16	103	2	3	4	317
Lori	274	5	76		4	24	22	88	1	6		500
Shirak	229	4	38		8	12	16	78		3	1	389
Syunik	130	16	28	1	13	47	15	66			1	317
Tavush	146	2	32	1	3	23	23	79		2		311
Vayots Dzor	133	2	73	1	2	22	23	54	2	4	1	317
Yerevan	482	111	162	6	28	188	83	296	7	18	3	1384
Total	1992	210	563	12	112	566	276	1145	13	54	16	4959

Apart from the fact that the indicators characterizing the socio-economic status of households in the RA are significantly differentiated, which is clear from the high variation indicators, they are also quite unevenly distributed, because some regions, such as Shirak, Gegharkunik, Tavush, and Lori, have the lowest level of development and living standards, and therefore the majority of their households are included in the same cluster.

Contrary to this, regions like Ararat, Armavir, and Kotayk, being close to Yerevan city, are ahead of the previously mentioned regions in a number of socio-economic indicators. Also, the living standards of households in these regions are in a more positive state.

We should also mention the fact that the living standard in the regions or inclusion in the included clusters is significantly influenced by the source of the population's main income: agriculture hired work, etc., as well as the resource saturation of the regions, which creates an opportunity for the population of the regions to generate average or above-average incomes. Such an example is the Syunik region, where the abundance of natural resources, and the presence of mining centers create a higher income opportunity for significant groups of the population. In this regard, the population of the regions close to the city of Yerevan is in a more advantageous position, having the opportunity to use the resources concentrated in Yerevan. Regions known as agricultural centers are characterized by a lower standard of living. Therefore, the most targeted fiscal policy should take into account the specificities of individual regions, contributing to a more efficient use of their resources, or increasing the inclusiveness of policies aimed at it.

The majority of the indicators we observed are statistically significant, so our cluster analysis results can be considered reliable. However, we should also note that a factor analysis of the above indicators is advisable for a more comprehensive and complete analysis.

Factor analysis is a statistical method used to examine and group relationships between multiple variables to discover abstract factors or other factors. This method is often used in the field of data when it is necessary to reveal hidden structures or reduce the data's dimensions. Before considering individual factors, it is necessary to first present how much percentage of the variation of each of the considered factors is explained by the estimated model (Table 5). By looking at the table, it becomes obvious that the coefficient of explained variation in 5 out of 13 variables is greater than 0.95, and in no case is it less than 0.50. This naturally indicates that the variables were significant for the factor analysis.

Table 5

Variance estimates of observed factors

<i>Index name</i>	<i>The explained portion of the variation</i>
Number of the members of the household	0.761
Food purchased by a household per month in dram	0.730
Food consumed by a household per month in dram	0.543
Nonfood purchased by a household per month in dram	0.737
Nonfood gifts of a household per month in dram	0.973
Expenditures of a household per month in dram	0.968
The monetary income of a household per month in dram	0.950
Total income of a household per month in dram	0.963
Non-monetary income of a household per month in dram	0.997
Income from salary, including in-kind payment of a household per month in dram	0.818
The educational level of the head of the hh	0.411
Age of the head of the hh	0.493
Poverty	0.791

In general, using the statistical package, 5 main factors were distinguished under the conditions of the limit of having 1 own value. Together, those factors account for 78% of the variation accounted for by the 13 indicators, or in other words, the model contains 78% of the prior information, which is a pretty good result. The eigenvalues of each factor obtained through the model and the percentages of variation explained by them are presented in the table below.

Table 6

Factors obtained through the model

<i>Factor</i>	<i>Own value</i>	<i>Explained variation %</i>	<i>Cumulative variation %</i>
1	2.682	20.633	20.633
2	2.515	19.344	39.977
3	2.379	18.296	58.274
4	1.333	10.256	68.530
5	1.225	9.422	77.952

The 5 new factors formed are in a certain relationship with the indicators characterizing the living standard, or in other words, each of the indicators has its own factor load, which we present in the attached table. Moving on to the interpretation of the factor loading of the variables, we can note that the first factor is characterized by high levels of cash income, net income, and wages. The linear relationship with poverty is negative; that is, this factor is also characterized by a low level of poverty. We can relatively call this factor "Rich Households". Cluster 1, which includes the majority of households, has an average factor loading of this factor of -0.522, from which we can conclude that the rich households with our description are not so many in the cluster that includes the

largest households. The burden factor in this cluster ranges from -1.31 to 0.09, and it should be noted that only 4 of the observed households received a positive assessment. Compared to this assessment, the Kotayk, Yerevan, and Armavir regions are relatively more favorable. In Cluster 8, the second largest cluster, the mean score on this factor is 0.08, and the within-cluster factor variance is -0.51 to 0.79, with 59 percent or more of households scoring positively on this factor. In Cluster 3, similar to Cluster 1, the average score of households on the first factor is negative, being -0.52 and ranging from -2.29 to 0.15. And in this cluster, there was only a positive result in the number 2 households. On the contrary, Cluster 6 and Cluster 3, where 566 households are included, have a positive assessment from this factor, and only 1 household included in this cluster received a negative assessment. This also proves the difference between Cluster 6 and Cluster 3 mentioned above. If we look at regions, we notice that Kotayk, Syunik, Armavir, Aragatsotn, and Ararat regions, as well as the capital Yerevan, received an average positive rating from this factor, while the average rating of other regions is negative. The regions with the most positive evaluation from this factor are Yerevan, with 576 households, Kotayk with 192, Armavir with 170, and Shirak, Tavush, and Vayots Dzor regions, with a relatively low positive result. However, if we look at the average ratings of individual regions in the clusters, all the regions in Cluster 1 from the first factor received a negative rating, which is certainly very worrying in the case of this cluster. In the case of the second factor, the relationship is particularly strong with the indicator characterizing the living standard in monetary terms of non-food goods and services received free of charge from friends or other people, and also these households are characterized by a high level of non-monetary income and monthly expenses. The linear relationship with poverty is negative. This factor can be relatively called "Households with non-monetary income security". Clusters 1, 2, 6, and 8 received an average negative evaluation of this factor by cluster. Cluster 1 scores range from -0.73 to 1.20. Households included in Cluster 3, Cluster 8, and Cluster 1 received a particularly large number of positive evaluations from this factor, with values of 376, 343, and 281, respectively. Looking at regions, we notice that Vayots Dzor, Armavir, Gegharkunik, and Yerevan received medium positive evaluations. The regions of Syunik and Tavush stand out with a relatively small number of households with a positive score from this factor. Households included in relatively small clusters received the main average positive score from this factor. The third factor is characterized by a high correlation with indicators of food and non-food purchases of households (non-food purchased of household per month in drams). Cost-related implicitness is also important. This factor can be relatively called "families with high consumer activity". Only the 2 largest clusters, Clusters 1 and 8, received an average negative score from this factor. At the same time, Cluster 8 also stands out with a large number of households with a positive score from this factor. If we consider by regions, only Shirak and Gegharkunik regions, as well as Lori and Armavir, have an average negative

evaluation, and the regions with the largest number of positive evaluations are Lori, Ararat, and Syunik, while Gegharkunik has the smallest number of families with positive evaluations.

The fourth factor, in contrast to the previous one, has a negative correlation with the indicators of the purchase of food and non-food products (non-food purchased by a household per month in dram), as well as with the educational level and age of the head of the household. Its correlation with poverty is positive. This factor can be relatively called "families with a low living standard". Clusters 5, 6, and 8 are the clusters that received an average positive evaluation from this factor. Among the clusters, Clusters 8 and 1 with 555 and 544 households, respectively, stand out in terms of the number of positive evaluations. When looking at the regions, it is noticed that both Yerevan and Syunik have a markedly negative average score for this factor, which again shows the significant difference in the socio-economic and living standard indicators of these regions from the rest of the regions.

Table 7

The results of the evaluation of factor components of variables

	<i>Component</i>				
	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
Number of the members of the household	0.239	0.151	0.495	0.631	0.194
Food purchased by a household per month in dram	0.195	0.032	0.821	-0.026	-0.126
Food consumed by a household per month in dram	0.059	0.172	0.180	0.057	0.688
Nonfood purchased by a household per month in dram	0.174	0.080	0.835	-0.052	0.018
Nonfood gifts of a household per month in dram	0.098	0.977	0.062	-0.025	-0.071
Expenditures of a household per month in dram	0.224	0.633	0.717	-0.044	0.011
The monetary income of a household per month in dram	0.949	0.060	0.208	0.036	0.020
Total income of a household per month in dram	0.891	0.342	0.220	0.030	0.053
Non-monetary income of a household per month in dram	0.110	0.979	0.108	-0.008	0.120
Income from salary, including in-kind payment of a household per month in dram	0.877	-0.005	0.141	0.033	-0.168
The educational level of the head of the hh	0.108	0.069	0.104	-0.313	-0.535
Age of the head of the hh	-0.074	-0.084	-0.200	-0.285	0.599
Poverty	-0.008	-0.097	-0.193	0.862	-0.033

The indicator is also negative in the Aragatsotn region. The fifth factor is characterized by the high expenditure on household food consumption and the low educational level of the head of the household. The relationship with wage income is also negative. This factor can be relatively called "families with an average standard of living". From this factor, the first and third large clusters received a positive evaluation, and the 6th and 8th clusters had a negative average evaluation. Looking at regions, we notice that Vayots Dzor, Aragatsotn, Tavush, Lori, and Gegharkunik regions received an average positive rating.

CONCLUSIONS. By generalizing the performed analysis, we can draw a number of important conclusions and generalizations.

➤ *The cluster covering 40% of the observations is characterized by a rather low level of income and expenses. The latter is the largest target group in terms of improving living standards and increasing the inclusiveness of economic policy.*

- The next cluster in size is characterized by more family members than the previous one, which is the reason for relatively high expenses, and incomes, although higher than the previous cluster, are still lower than the national average.
- Although the next two largest clusters have the same number of family members, they are at the extreme poles in terms of incomes: the incomes of Cluster 6 are 43% higher than the average monthly national index, and Cluster 3 is 2 times lower than the average index. Both clusters have higher than average non-monetary incomes, in the case of the 6th, incomes from work are higher. In terms of expenses, Cluster 3 exceeds the 6th one, the size of which is equal to the national average.
- The remaining observed clusters cover about 20% of the sample. Some of them are distinguished by a higher level of education, which ensures a higher level of income and, therefore, expenses.
- Clusters include groups that, despite having a high income, are distinguished by a smaller number of expenses, which characterizes their more frugal behavior.
- On the contrary, there are clusters where the level of expenses is quite high.
- The variation analysis of the observed clusters indicates a rather large differentiation of the living standard in the republic, but the largest groups are characterized by a rather low level of income and expenses.

➤ *The analyses carried out on a regional basis allow us to make observations about the features that shape living standards in individual regions.*

- The majority of the observations made in the Lori, Shirak, Tavush, and Gegharkunik regions—55%, 59%, 47%, and 45%, respectively – are

included in Cluster 1, which is distinguished by a lower standard of living.

- The specific weight of the mentioned regions is high in Cluster 3, which allows us to conclude that most households in these regions have similar standards of living.
- Kotayk, Armavir, and Ararat regions have a particularly large share in Cluster 7 by share, with 32% and 29% share, respectively. In this cluster, the capital Yerevan, Syunik, and Tavush regions also stand out with a large number of observations. Such a picture is explained by the fact that the mentioned regions are quite close to the capital, with relatively high opportunities for the development of agriculture or industry.
- The analysis of the variation of clusters of regions allows us to conclude that Shirak, Gegharkunik, Tavush, and Lori are distinguished by the lowest level of development and living standard, and therefore, the majority of households of the latter are included in the same cluster.
- The Ararat, Armavir, and Kotayk regions, being close to the city of Yerevan, are ahead of the above-mentioned regions in a number of socio-economic indicators. The living standards of households in these regions are in a more positive state.

➤ *From these results, these main points can be concluded.*

- **Differences in the socio-economic status of households.** Different regions and clusters significantly differ in income, expenditure, and living standards. Yerevan, Kotayk, Syunik, and Armavir, as well as some rich clusters, have more favorable socio-economic conditions, while Shirak, Tavush, Vayots Dzor, and some large clusters are in weaker positions.
- **A clear division of rich and poor households.** The first factor shows that high-income families are mostly concentrated in regions and clusters with higher living standards. At the same time, poverty is high in some clusters and regions, suggesting regional disparities.
- **Effect of non-monetary income.** Households supported by non-cash income (such as support from relatives) are generally better off. This suggests that informal support mechanisms play an important role in household well-being.
- **Concentration of consumer activity.** The third factor shows that consumer activity (food and non-food purchases) is mainly concentrated in certain marzes and clusters, such as Ararat and Lori. This suggests that some households have a greater capacity for consumption, which may indicate a higher standard of living for those households.
- **Poverty and low standard of living.** The fourth factor indicates that in some regions (for example, Shirak, and Gegharkunik) there are more

families with a low standard of living, which suggests local social problems and a high poverty level.

The socio-economic conditions of households in Armenia differ greatly according to regions and clusters. Some regions (Yerevan, Kotayk, Syunik) are more prosperous, while the poverty level remains high in more vulnerable regions (Shirak, Vayots Dzor, Tavush). Regional disparities require targeted policies to strengthen social protection and equalize economic opportunities for different communities.

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