

ECONOMIC DEVELOPMENT AND RESEARCH CENTER



OVERVIEW AND CLASSIFICATION OF COMMUNITIES IN ARMENIA

COMMUNITY STUDY REPORT
YEREVAN 2006

The Community Study was implemented by the Economic Development and Research Center (2006).

info@edrc.am, www.edrc.am

Key Research Team:

Varazdat Karapetyan, PhD in Economics, Project Director

Mushegh Tumasyan, Research Director

Gagik Torosyan, PhD in Economics, Survey Coordinator

Gennadiy Terzikyan, PhD in Mathematics, Associate Professor, Mathematical Statistician

Yelena Manukyan, PhD in Economics, Statistical Analyst

Varsenik Mnatsakanyan, Research Assistant

Nune Zohrabyan, Administrative Assistant

The Economic Development and Research Center expresses its gratitude to those who advised and assisted the Research Team; in particular, Vahe Danielyan, board member of the National Statistical Service of Armenia; and Hrachya Petrosyan, an independent expert.

The Economic Development and Research Center also extends its gratitude to the working group comprised of staff members from the Ministry of Labor and Social Issues; in particular, Deputy Minister Artsvik Minasyan, Advisor to the Minister Armen Sahakyan, Department Head Astghik Minasyan, Division Head Armen Margaryan, as well as Project Coordinator of SPAR Arsen Hambardzumyan, and Heads of Regional Social Service Centers, Community Heads and School Directors of the surveyed communities.

Table of Contents

Preface	4
A. Research Design and Implementation	5
Objectives.....	5
Selection of the Tools and Data Collection	5
Communities Included in the Survey.....	6
B. Overview of Armenian Communities.....	9
Size and Population of Communities.....	9
Availability of Social and Economic Infrastructures	11
Distance from Yerevan and Quality of Roads	13
Prices for Real Estate	17
Subjective Assessment of Poverty and Social Services	19
C. Methodology of Community Classification and Grouping	22
Urgency	22
Methodology.....	23
Formulation and Testing of Hypotheses.....	23
Classification of Communities	25
Calculation of Community Coefficients in the Family Benefits System	27
Annex 1. Detailed Community Classification Methodology.....	28
Annex 2. Regional Coefficients of the Family Benefit Formula System for the Surveyed Communities	33

Preface

Economic Development and Research Center (EDRC) is a non-profit and politically unaffiliated organization established in 2001 in Yerevan, Armenia¹. EDRC conduct the “Community Study” for the Ministry of Labor and Social Issues within the framework of the “Social Protection Administration Project” of the World Bank.

The objectives of the study were: review community specifics in Armenia, develop approaches to assessing and classifying the communities, assess current social services, and identify the correlation between the living standards of households and community categories and parameters.

Within the project was organized a number meetings and discussions, reviewed the available information and proper studies. Based on the discussions and analysis questionnaire was developed, and statistical survey was conducted.

As a result of the project implementation:

- A database on 555 rural Armenian communities was developed, which includes a number of socio-economic data that can be used for various analyses.
- Major specifics of communities were identified and assessed.
- A methodology was developed to classify all rural communities into 18 categories. Based on this classification and depending on the logic of the given social service, it is easy to group (or to differ) the communities, if necessary.
- This analytical paper was prepared which serves as the final project report.

The first section of this paper summarizes the methodology of the study and the list of communities involved in the study. The second section is dedicated to describing the current situation and briefly analyzing a number of indicators, as well as assessing priorities of social services. The third section introduces the methodology for Community assessment and classification. It also contains, as an example, the calculation of the community differentiation coefficient currently used in the Family Benefit system for the communities included in this study.

The report also contains annexes, as well as the Community Survey Database (SPSS-based) and the Community Survey Questionnaire on a CD-Rom.

¹ For details about the Economic Development and Research Center, please visit www.edrc.am

A. Research Design and Implementation

Objectives

Disproportionate development is obvious throughout Armenia. The overwhelming majority of economic output is produced and re-produced in the capital and its surrounding communities. Some communities are solely involved in agriculture and almost do not generate non-agricultural income. The communities differ considerably from each other and are unique in terms of size, geographic location, as well as availability or access to social and/or economic infrastructure. This triggers significant variations in the welfare of the households in Armenian communities, even when the households have similar demographic and economic characteristics.

Identification of community specifics and assessment of their influence on household welfare are deemed very important from the perspective of social policy. This enables diversified approaches to be applied to different groups of communities, thus increasing the fairness and efficiency of the system.

The objectives of the study are:

- To review and identify specifics of the Armenian communities,
- To develop methodology for the evaluation and categorization of communities,
- To reveal the correlation between the types (categories) of communities and household living standards, and
- To evaluate the social services and assess their priorities.

In order to achieve the objectives, we reviewed and analyzed all available official and non-official statistics, reports prepared by other organizations and individual consultants. Furthermore, meetings and discussions were held with experts, policy-makers, community heads and people living in these communities. Nonetheless, the listed information was not sufficient to achieve the desired objectives. Therefore, we conducted survey to collect the necessary data and develop a database that would be representative of communities in Armenia. The analyses of the database served as the basis for achieving the study objectives.

Selection of the Tools and Data Collection

From the viewpoint of ensuring the achievement of the study objectives and targets, it is extremely important to collect data through survey and then analyze them. It would not be feasible to achieve the set objectives without fieldwork (survey).

The main instrument used to collect data was the Community Survey Questionnaire intended for community leaders and other community officials. The questionnaire was developed after meetings and consultations with community leaders, experts and people living in the communities. The special experts working group established by the Ministry of Labor and Social Issues also contributed to the preparation and finalization of the questionnaire.

The main objective of the questionnaire was to collect data, the analyses of which will facilitate identifying the specifics of Armenian communities and the impact thereof on the living standards of households in them. The second important objective was to test the initial hypothesis on differentiation and categorization of communities. Therefore, the test variables of our hypotheses were also included in the questionnaire.

One main questionnaire was filled out for each community, describing the community as a whole. Indicators included in the questionnaire are specific for the whole community (climate, geography, physical parameters, availability of infrastructure, economic sectors, etc.) Data on narrower indicators can be specific to individual households. In such cases, we usually relied on official statistics and/or expert assessments (agricultural land yield, price or rent for land or real estate, etc.) Some indicators can be very subjective and vary significantly by individual household (e.g., assessment of social service fairness or assessment of the living standards of households in the community.) That is why the additional instrument of survey was developed—the questionnaire intended for school directors/teachers. The latter was filled out by people without a direct relationship to other community government bodies; however, they still represent local society and are aware of community specifics. Teachers and school directors very much match this description.

Thus, data collected through the second questionnaire provides an alternative to the first set of data (collected from community leaders) and, if needed, the two sets can be compared.

Taking into account the survey objectives and specifics, it was necessary to collect data on as many communities as possible. We opted to forego a sampling methodology. Instead, we attempted to ensure universal coverage of the general population or include at least every second community in Armenia.

The questionnaire was sent to all rural communities and small town municipalities. The survey was advised and supervised by the established working group and 40 Regional Social Services Centers. Special workgroups were established to visit communities to advise the community leaders on how to fill out the questionnaire.

After the set deadline for the implementation of fieldwork and having received completed questionnaires from a minimum of 50 percent of the communities in each marz (province), we considered the fieldwork complete. As a result, the questionnaire was completed by 555 rural communities and 15 town communities, whereas the Teacher Questionnaire was completed for 222 communities.

Random selection of communities and data collection was ensured during the survey. Non-inclusion of any community was not intended for any specific reason, and the communities were not included for any algorithm or pattern. The analysis of the collected data did not reveal any irregular features in the parameters of a regional, altitude or any other indicator for surveyed communities. Therefore, one can state that the data was collected from randomly selected communities and can be representative of the entire country.

The survey mostly focused on rural communities since the methodologically used would make it extremely difficult to assess and evaluate the welfare of households in urban communities, or identify the factors affecting it. The number of urban communities is much smaller. It is much more reasonable to analyze each town individually without grouping. Small town communities were, nevertheless, included in the survey: we used a slightly modified questionnaire that was adapted for urban specifics.

Although we developed the database for urban communities, this report analyzes only the data and information collected from rural communities.

Communities Included in the Survey

There are 867 populated rural communities in Armenia. The survey included 154 small communities (population of less than 500) and 401 large- and medium-sized rural communities. As a result, the survey covered about 64 percent of all rural communities with the lowest coverage in Shirak Marz (54.5 percent) and the highest in Vayots Dzor Marz (78 percent.) The largest number of questionnaires was completed in Lori Marz by 76 rural communities.

Table 1: General Population and Surveyed Communities

	High-Mountainous	Mountainous	Pre-mountainous	Valleys	Total
<i>General Population</i>					
Rural Communities*	317	220	166	164	867
Large and Medium villages	258	147	92	86	583
Small villages	59	73	74	78	284
<i>Surveyed Communities</i>					
Surveyed Rural Communities	221	137	97	100	555
Large and Medium villages	184	95	60	62	401
Small villages	37	42	37	38	154
<i>Survey Coverage (%)</i>					
Total	69.7	62.3	58.4	61.0	64.0
Large and Medium villages	71.3	64.6	65.2	72.1	68.8
Small villages	62.7	57.5	50.0	48.7	54.2

* Empty (not populated) villages not included.

Table 2: Breakdown of Surveyed Rural Communities per Marzes

	Large and Medium villages	Small villages	Total	Large and Medium villages	Small villages	Total
	<i>Number of surveyed communities</i>			<i>As % of general population</i>		
Aragatsotn	43	23	66	67.2	48.9	59.5
Ararat	57	2	59	65.5	33.3	63.4
Armavir	61	3	64	69.3	50.0	68.1
Gegharkuniq	43	13	56	72.9	48.1	65.1
Lori	45	31	76	72.6	72.1	72.4
Kotayq	32	5	37	61.5	62.5	61.7
Shirak	44	19	63	62.0	42.2	54.3
Syuniq	27	38	65	90.0	52.1	63.1
Vayots Dzor	19	13	32	82.6	72.2	78.0
Tavush	30	7	37	63.8	63.6	63.8
Total	401	154	555	68.8	54.2	64.0

Rural communities included in the survey cover 67 percent of the total rural population in Armenia. Although the coverage in Shiraz Marz was the lowest (54.3 percent), 66 percent of the population in this marz lives in the communities surveyed in this marz. In some marzes, the population of surveyed communities covers more than 80 percent of the marz' total population (Syunik and Vayots Dzor), while the surveyed communities in Kotayk Marz cover only 55.6 percent of the total population (See Table 3).

Table 3: Coverage of Surveyed Communities and Population per Marzes (percentage of actual population)

	Large and Medium villages	Small villages	Total	Large and Medium villages	Small villages	Total
	<i>Number of villages</i>			<i>Rural population*</i>		
Aragatsotn	67.2	48.9	59.5	59.2	54.3	58.7
Ararat	65.5	33.3	63.4	64.0	49.3	63.9
Armavir	69.3	50.0	68.1	68.8	57.0	68.7
Gegharkuniq	72.9	48.1	65.1	77.1	55.9	76.1
Lori	61.5	62.5	61.7	55.6	57.2	55.6
Kotayq	72.6	72.1	72.4	68.1	77.0	69.2
Shirak	62.0	42.2	54.3	68.5	49.2	66.4
Syuniq	90.0	52.1	63.1	89.0	66.9	81.7
Vayots Dzor	82.6	72.2	78.0	87.6	75.1	85.8
Tavush	63.8	63.6	63.8	64.2	66.6	64.3
Total	68.8	54.2	64.0	67.6	62.6	67.2

*Data of 2001 Census on actual population numbers.

Fifty-four percent of the communities with a population of less than 500 (hereinafter called small villages/communities) and 69 percent communities with a population of more than 500 (hereinafter called large and medium villages/communities) were included in the survey. The highest coverage was recorded among Large and Medium High-Mountainous Villages (72 percent) and villages of the same size on valleys (71 percent), whereas the lowest coverage was among Small High-Mountainous Villages (about 49 percent). Nevertheless, about 55 percent of the population in Small High-Mountainous Villages and 77 percent of High-Mountainous Villages were covered by the survey. At the same time, 63 percent of Small Villages on Valleys were covered by the survey, thus including about 75 percent of the population of such communities. In other words, the survey sufficiently covers all types of communities. Furthermore, every second village in each type is covered (See Table 4).

Table 4: Coverage of Communities and Population per Altitude Categories (percentage of total actual)

	Valleys	Pre-mountainous	Mountainous	High-mountainous	Total
<i>Number of Communities</i>					
Large and Medium rural communities	71.3	64.6	65.2	72.1	68.8
Small rural communities	62.7	57.5	50.0	48.7	54.2
Total	69.7	62.3	58.4	61.0	64.0
<i>Population*</i>					
Large and Medium rural communities	68.8	59.7	65.5	76.6	67.6
Small rural communities	75.1	65.9	57.5	54.9	62.6
Total	69.0	60.2	64.3	74.4	67.2

*Data of 2001 Census on actual population numbers.

B. Overview of Armenian Communities

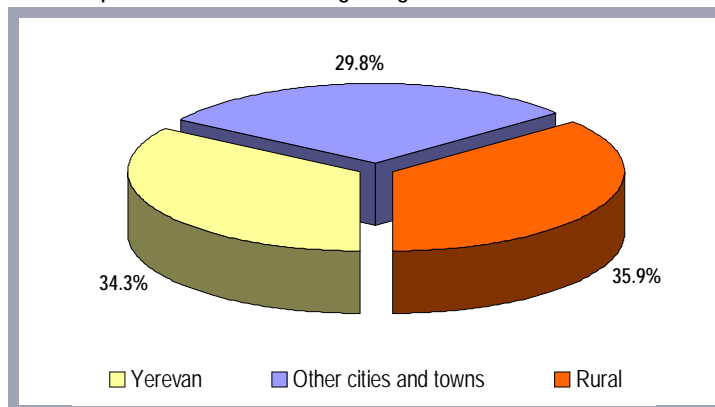
Size and Population of Communities

Armenia is divided into 11 marzes, including the capital of Yerevan which has marz status. Marzes and Yerevan carry out state government activities whereas local communities (including district communities in Yerevan) carry out local self-governance.² Each community may contain one or more settlements.

Armenia has 47 urban cities and towns (other than Yerevan) and, respectively, 47 urban communities. Thirty-nine of these are single urban communities. However, Ashtarak, Sevan, Alaverdi, Akhtala, Tumanyan, Shamlugh, Stepanavan and Jermuk towns (communities) also include adjacent rural settlements.

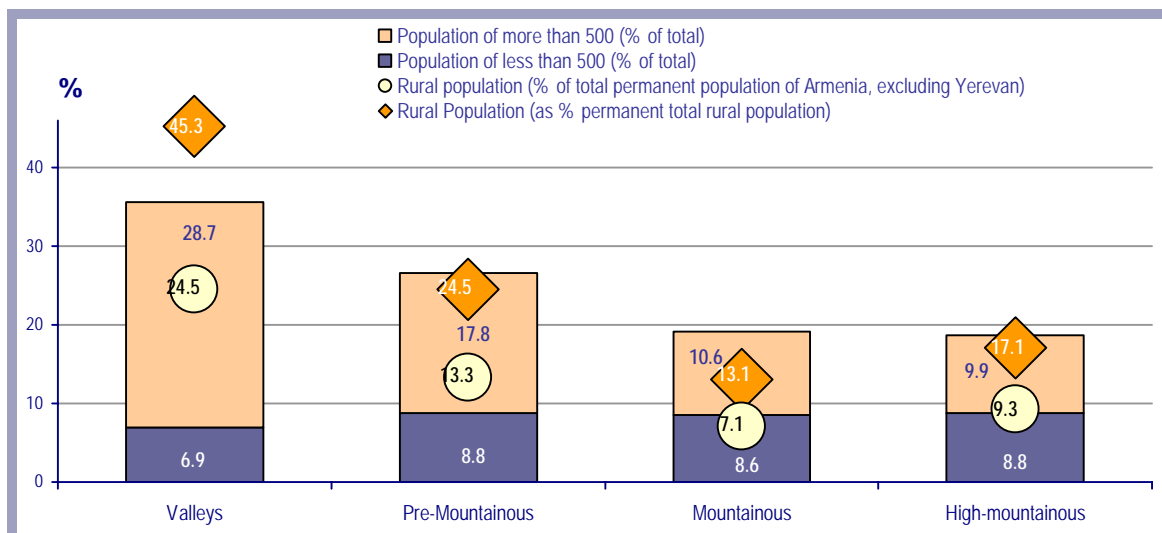
About 64 percent of the total Armenian population lives in towns and cities, including 53 percent in Yerevan.³ About 36 percent of the total population or about 1.2 million people live in rural communities.

Figure 1: Breakdown of Permanent Population in Armenia at Beginning of 2006, %



Population density varies significantly depending on the settlement's altitude. About half of the rural population—or one-quarter of the population living outside Yerevan—lives in communities located in valleys (up to 1,300 meters above sea level.) One-third of the rural population—or 16 percent of the population living outside Yerevan—lives in Mountainous and High-Mountainous areas. A concentration in the valleys shows the significance of the natural and climate conditions on population concentrations, along with their high impact on the Yerevan Capital.

Figure 2: Number of Rural Communities in Armenia and Breakdown of Population by Altitude Groups



Armenian communities vary significantly in terms of their size. Most of the communities are small or super small. About one-third of all communities have a population less than 500 people, while the population of almost half of all communities

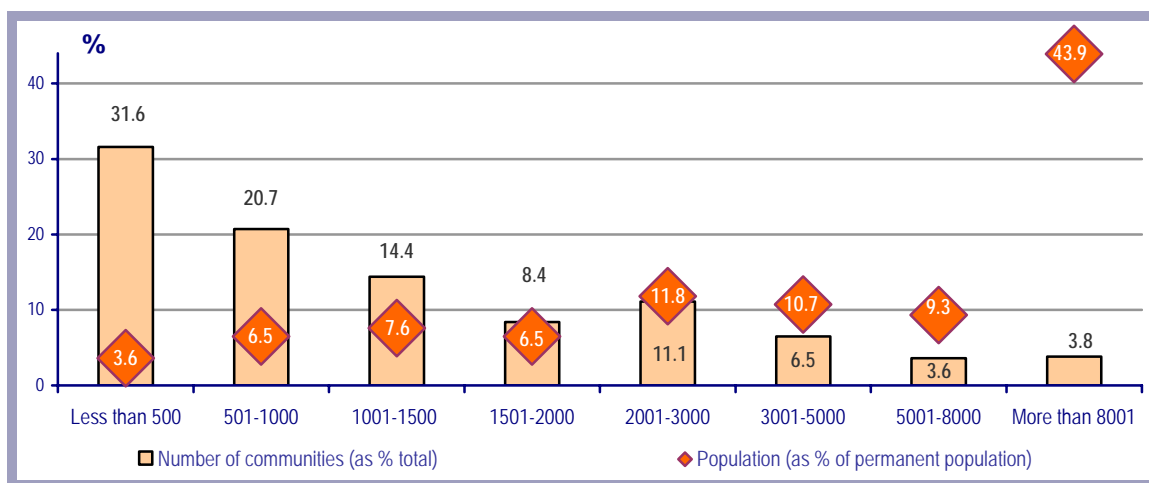
² See the Law on Regional and Administrative Division of Armenia, 1995.

³ Source: RA NSS. See: www.edrc.am

does not exceed 1,000. For the population in about 100 communities, one multi-apartment block (five stories) will suffice. The total population of about 400 small communities is equivalent to the population of the Malatia-Sebastia district community in Yerevan or to the population of the City of Gyumri.⁴

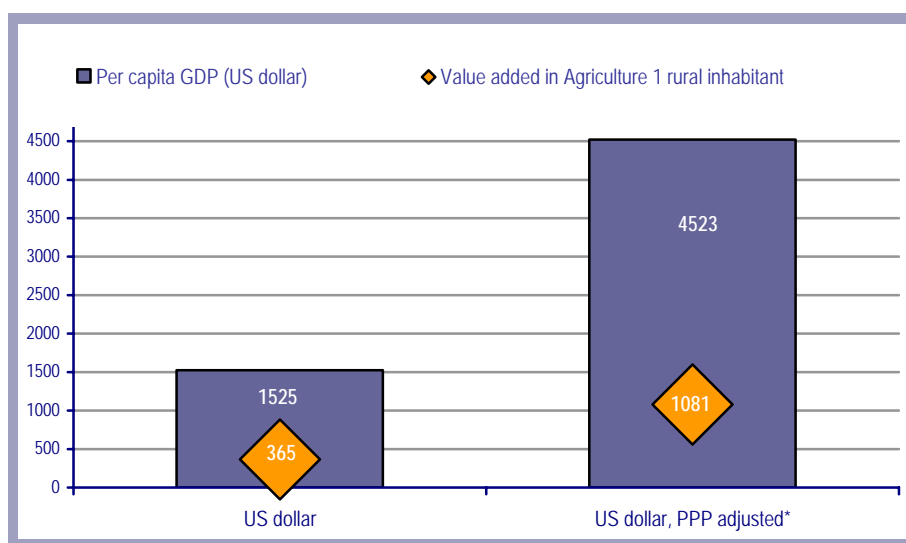
About 60 percent of the total rural population lives in 187 out of a total of 870 rural communities.

Figure 3: Total Number of Urban/Rural Communities in Armenia and Population per Size of Community (excluding Yerevan)



Regional disproportions in income and wealth in Armenia are apparent. The major source of income in rural areas is agriculture, while the non-agricultural gross domestic product (GDP) generation is insignificant. In general, the agriculture sector accounts for 18 to 20 percent of the national GDP. Gross income generated by the rural rural is comparatively low. Gross per capita income generated in the agricultural sector is about four times lower than the national average.

Figure 4: Per Capita GDP and Per Capita Aggregate Value Added in Agriculture, 2005



* Calculates at US dollar Purchasing Power Parity (PPP) equal to 3:

Nevertheless, the “extreme poverty” indicator in rural areas is much lower than the national average, explained by the fact that rural areas have greater food availability and better possibilities to ensure it. However in urban areas (excluding Yerevan), both poverty and extreme poverty indicators are the highest as compared to the national average.⁵ According to the “Database on Household Social Vulnerability Evaluation” of the Ministry of Labor and Social Issues, about 26 percent of people living in villages with populations less than 500 receive Family Benefits, while in urban areas only 24 percent receive the same benefits. The national average is 16.5 percent of all households.

⁴ Calculation based on data of 2001 Census.

⁵ Data of 2004 Household (integrated) Survey of the National Statistical Service of Armenia.

According to the Survey on the “Poor Families and Social Services in Armenia”,⁶ 82 percent of households living in villages with a population less than 500 spend less than AMD 20,000 per capita (subjective assessment), whereas in the remaining rural areas, 61 percent spend the same amount. This is in comparison to the national average of 54 percent of people who spend less than AMD 20,000 per capita and 40 percent in Yerevan.

Availability of Social and Economic Infrastructures

According to the survey, about 24 percent of villages do not have grocery stores and seldom do they have household shops or construction material stores. Cafes are found in 7 percent of villages, whereas restaurants are found in 9 percent of them. The situation is more acute in Small villages: only 47 percent of villages in this group have a grocery store and only 6 percent have a household shop.

About half of all rural communities do not have an operating irrigation grid. In particular, 62 percent of Small villages do not have one. More than half of all Small villages do not have 10-year schools, only 38 percent of Large and Medium villages have kindergartens, and only 5 percent of Small rural communities have kindergartens.

Access to healthcare institutions and infrastructure is low. One could say that there are no hospitals or drug stores. Instead, ambulatories (found in 40 percent of Large and Medium communities) and medical stations (in 58 percent of Large and Medium communities and 70 percent of Small villages) play an important role in rural areas.

Access to communication and telecom services is very low, especially in Small villages (See Table 5). Small villages do not have access to Internet, fixed radio and/or local FM channels. There are no post offices in 65 percent of Small villages. Mobile telecom services are not accessible in 53 percent of Small villages, while fixed-line telephone services are available in only 40 percent of them.

A minimum of four TV channels are available in about 66 percent of all communities, with 47 percent of these in the Small village group.

Irrigation water supply is accessible to Large and Medium villages on valleys. Half of the villages in the Pre-Mountainous, Mountainous and High-Mountainous villages do not have an operating irrigation grid. Moreover, there is no operating irrigation grid in 62 percent of Small villages and in 65 percent of High-Mountainous villages.

Table 5: Availability of Some Social and Economic Infrastructure in Rural Communities
(percentage of communities without access to the type of infrastructure in the total for the group)

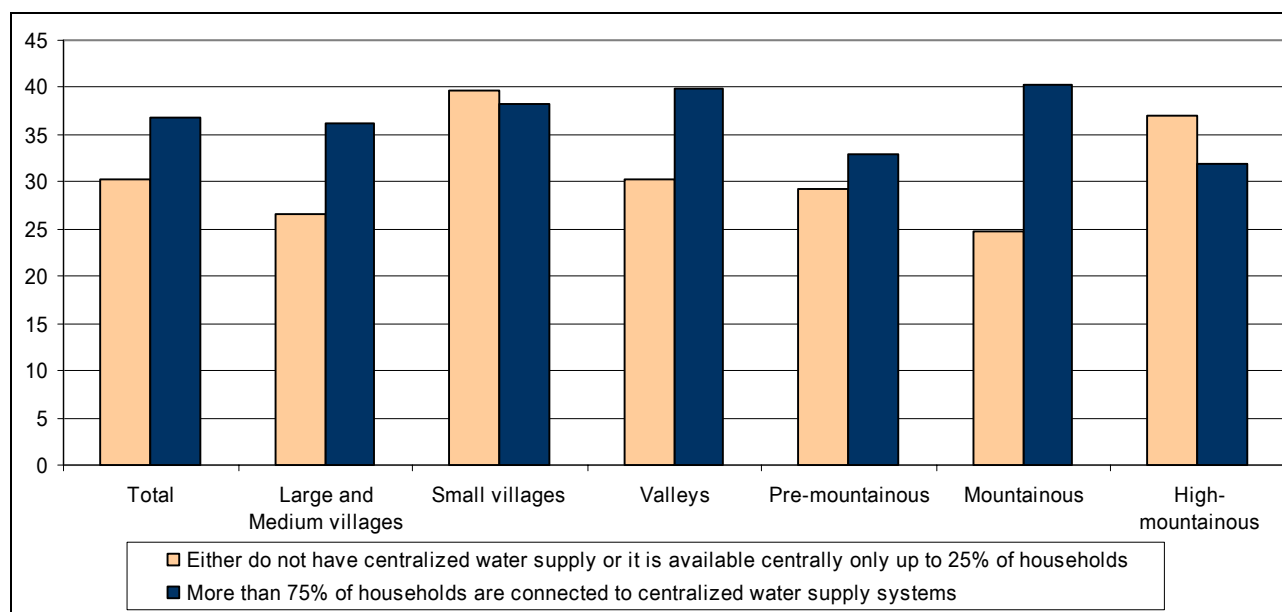
N	Infrastructure	Total	Large and Medium	Small	Valleys	Pre-mountainous	Mountainous	High-mountainous
1	Grocery stores	24%	13%	53%	15%	30%	32%	28%
2	Household shop	73%	65%	94%	62%	79%	80%	80%
3	Construction materials shop	94%	91%	99%	89%	95%	99%	97%
4	Hairdresser's	81%	74%	100%	67%	86%	96%	92%
5	Public bath (operating)	99%	99%	100%	98%	99%	100%	99%
6	Household service center	98%	98%	99%	98%	98%	100%	99%
7	Drug store	87%	83%	99%	83%	92%	94%	84%
8	Medical center (operating)	38%	42%	29%	46%	31%	27%	40%
9	Ambulatory (operating)	68%	59%	92%	55%	74%	76%	79%
10	Hospital (operating)	97%	97%	100%	99%	96%	98%	96%
11	Dentist	85%	79%	99%	78%	88%	93%	87%
12	Veterinary	16%	11%	30%	17%	17%	20%	11%
13	10-years general education school	19%	7%	51%	19%	21%	18%	20%
14	Kindergarten (operating)	71%	62%	95%	59%	77%	81%	77%
15	Operating sports school/ club	90%	87%	100%	84%	94%	94%	96%
16	Operating arts school/ club	90%	86%	100%	86%	91%	97%	90%

⁶ See “Poor Families and Social Services in Armenia”, Report on Household Statistical Sample Survey, Economic Development and Research Center, Yerevan 2006.

17	Operating library, other cultural centers or clubs	20%	14%	34%	16%	26%	20%	21%
18	Operating Church (with regular services)	83%	80%	91%	84%	83%	80%	83%
19	Organization supplying fertilizers and seeds	95%	95%	94%	96%	93%	95%	96%
20	Operating sewerage system	83%	81%	88%	81%	81%	86%	87%
21	Operating drinking water supply grid	13%	12%	14%	14%	18%	6%	10%
22	Operating irrigation water supply grid	44%	37%	62%	29%	50%	49%	65%
23	Fixed telephone lines	27%	22%	40%	23%	29%	21%	40%
24	Mobile telephone	32%	24%	53%	25%	41%	40%	29%
25	Post office	30%	17%	65%	23%	34%	35%	39%
26	Minimum 4 TV channels	34%	26%	53%	29%	43%	34%	33%
27	Fixed line radio	96%	96%	97%	96%	95%	96%	97%
28	Armenian and Russian FM channels	61%	55%	77%	52%	61%	72%	73%
29	Internet	89%	86%	98%	82%	91%	97%	96%
30	Weekly Media	56%	48%	76%	49%	55%	60%	67%
31	Bakery	86%	81%	99%	77%	90%	96%	90%
32	Restaurant	91%	90%	95%	89%	88%	96%	97%
33	Café	93%	91%	100%	90%	93%	97%	97%
34	Petrol station	73%	63%	98%	63%	74%	85%	80%
35	Small car service	86%	81%	98%	80%	88%	94%	90%

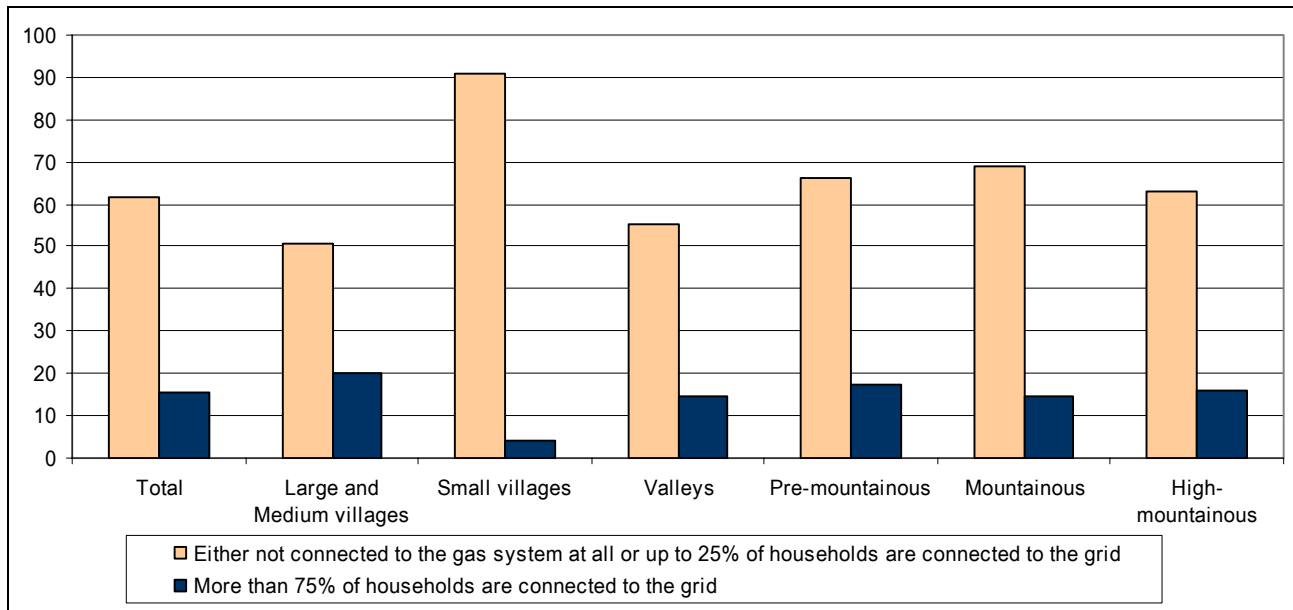
Although the majority of rural communities do have a centralized drinking water grid (see Table 5), most of the households are not connected to these centralized systems. Thirty percent of rural communities either do not have a centralized water supply or it is available to only 25 percent of the community's households (see Figure 5). More than 75 percent of households are connected to centralized water supply systems in 40 percent of Mountainous villages and Villages on Valleys: this is relatively high.

Figure 5: Ratio of Households Connected to Centralized Drinking Water Supply Systems (% in the respective group)



Connection levels to a natural gas supply system are extremely low in Small villages. Ninety percent of them have no connection to the gas system at all or up to 25 percent of the households are connected to the grid. About half of Large and Medium villages are connected to the gas supply system; however, only 20 percent of the communities have more than 75 percent of their households connected to the grid.

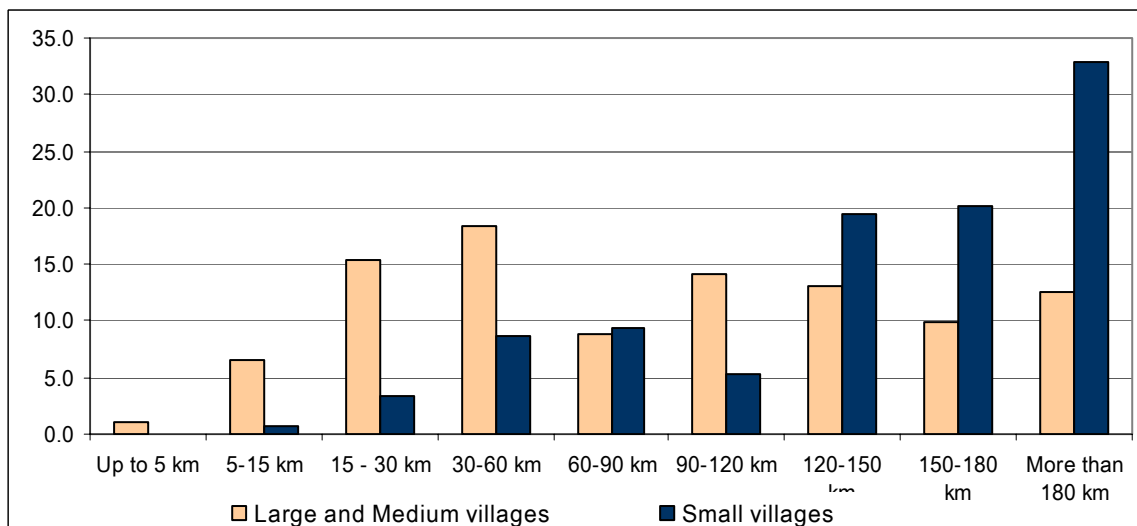
Figure 6: Connection to Natural Gas Supply System among Community Households (% of group's total)



Distance from Yerevan and Quality of Roads

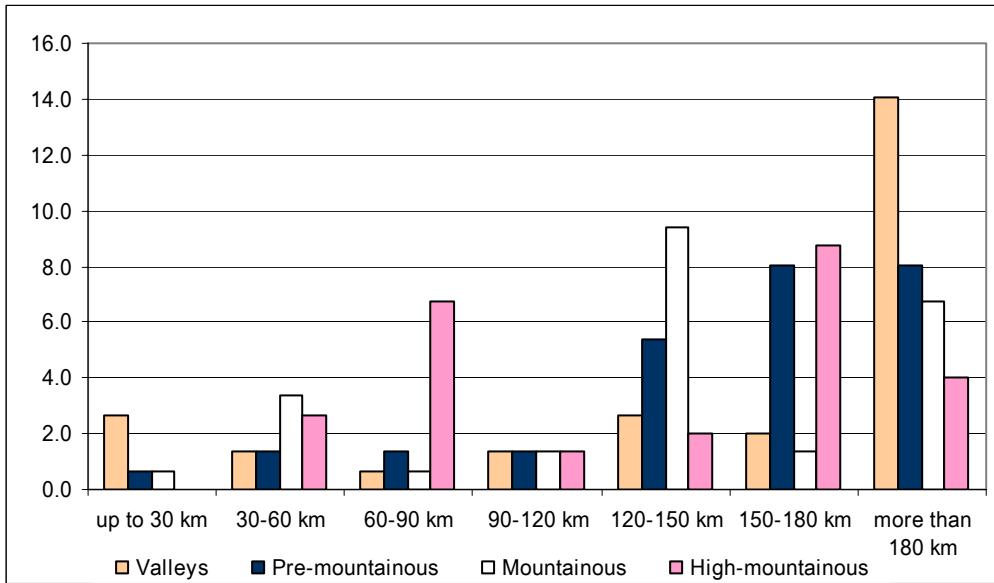
Analysis of surveyed communities shows that about half of Large and Medium villages in Armenia are located within 90 km of Yerevan with 23 percent of these within 30 km. Meanwhile, more than 78 percent of Small villages are more than 92 km away from Yerevan, 33 percent of which are more than 180 km away. Figure 7 depicts the breakdown of communities (per groups of Large and Medium, and Small communities) by their distance from Yerevan via the most convenient route.

Figure 7: Distance of Communities from Yerevan, Grouped by Altitude, in percentages (Large and Medium Communities = 100%, Small Communities = 100%)



Small communities are mostly located far from Yerevan; however, they lack distinct altitude parameters. Twenty percent of Small villages more than 90 km from Yerevan are located in valleys, while 23 percent are classified as Pre-Mountainous, 19 percent are Mountainous and 16 percent are High-Mountainous. Fourteen percent of Small villages in valleys are located the farthest from Yerevan at more than 180km.

Figure 8: Distance of Surveyed Small Rural Communities from Yerevan, Grouped by Altitude (% , Small Communities = 100%)



The majority of Large and Medium villages (62 percent) and 40 percent of Small villages are located within 5 km of the nearest state highway. Twenty-nine percent of Small villages are located within 15 km of the nearest state highway.

Figure 9: Communities Listed by Distance from Nearest State Highway (%)

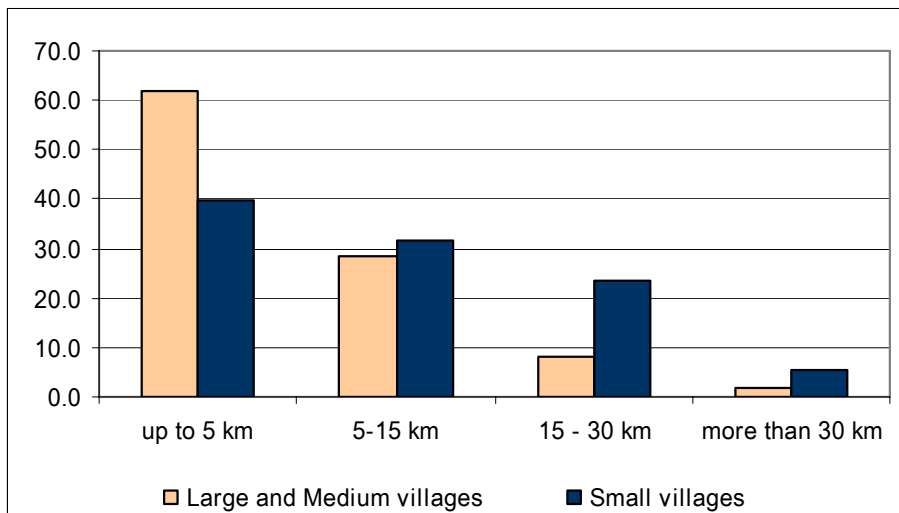


Figure 10: Distance of Small Villages from Highways (%)

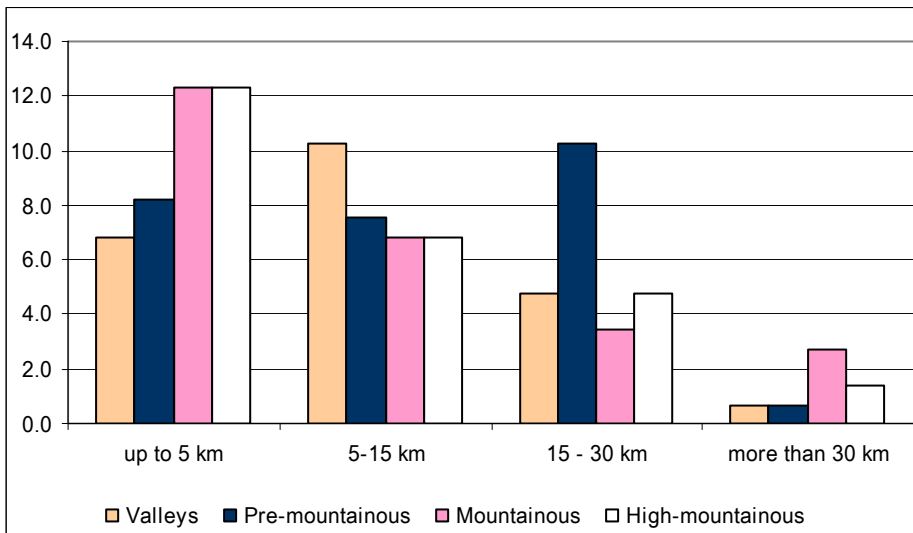
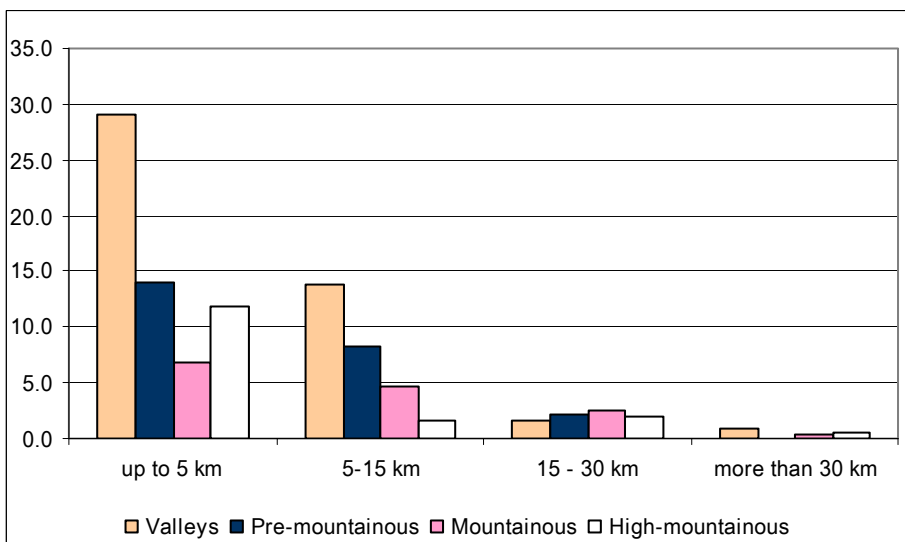
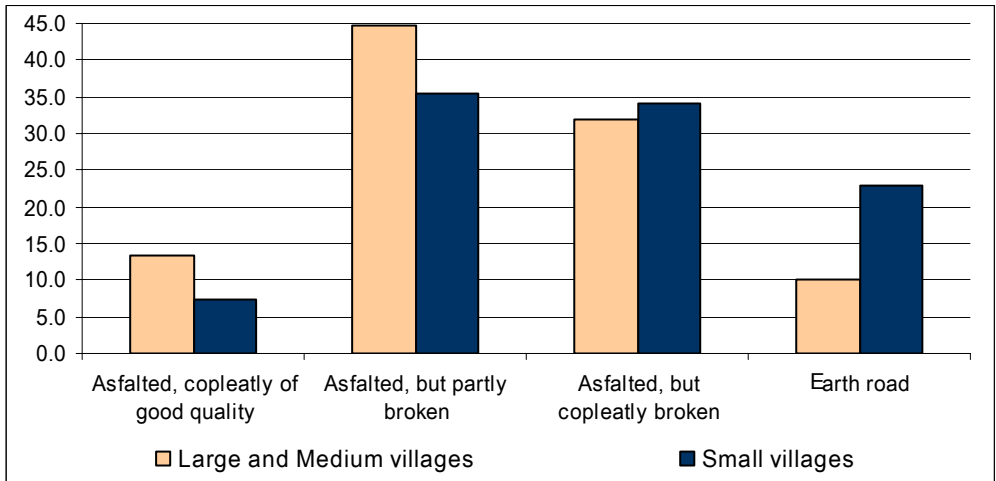


Figure 11: Distance of Large and Medium Villages from Highways (%)



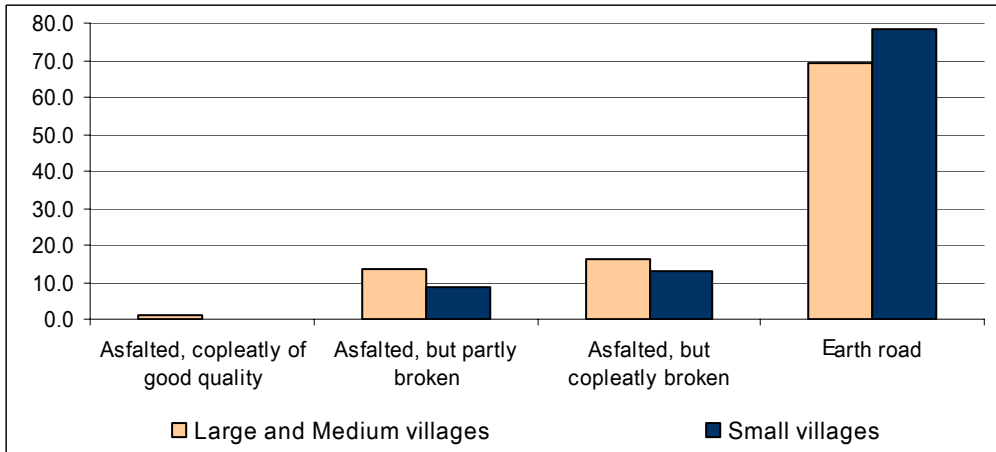
Despite the short distances of communities to the nearest highway, the local road connecting them to a highway is of good quality for only 14 percent of Large and Medium villages and only 8 percent of Small villages. In 42 percent of Large and Medium villages and 57 percent of Small villages, the road to the nearest highway is completely broken or lacking any asphalt.

Figure 12: Quality of Roads Connecting Communities to State Highways (%)



The survey revealed only a few communities has internal streets entirely in good shape and of good quality (see Figure 13.) In 78 percent of Small villages and 70 percent of Large and Medium villages, streets lack any asphalt.

Figure 13: Quality of Intra-Community Roads (%)



Prices for Real Estate

Prices for real estate are another important indicator which can describe the interest towards the community and its socio-economic parameters. The real estate market can be considered an independent and objective mechanism to evaluate the community. In other words, variations in real estate and land prices are a classification method dictated by the market.

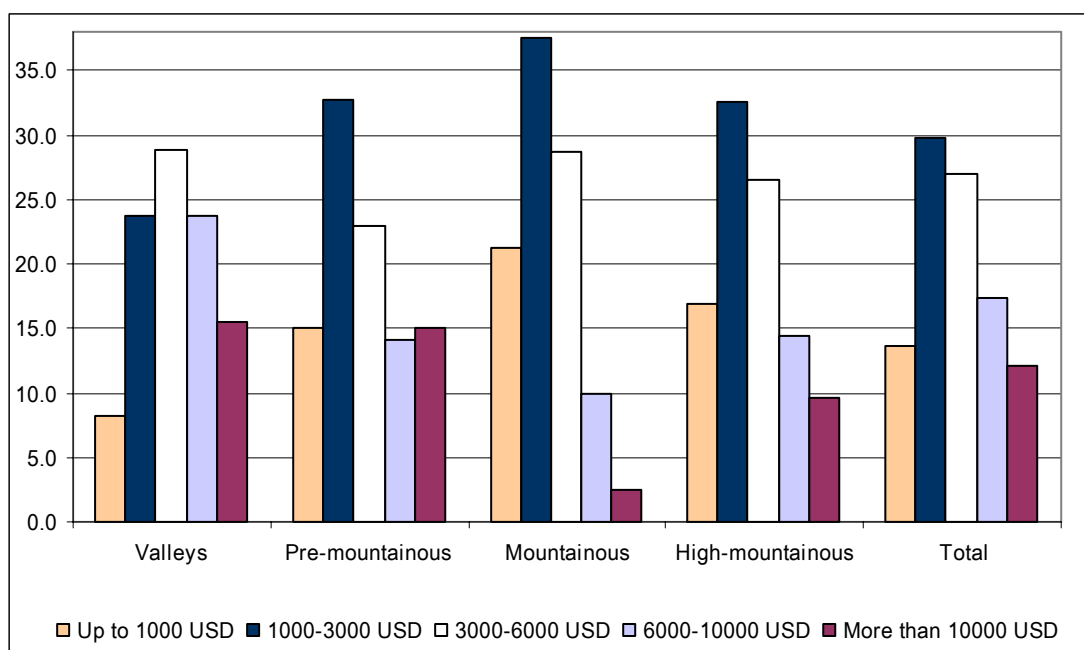
Thus, prices for real estate in rural communities significantly differ from prices in Yerevan and large cities. It is not possible to buy one square meter of living space in the center of Yerevan for the sale price of an average single-story house in about 35 percent of Small villages. The average price of a single-story house exceeds USD \$10,000 in only 7 percent of rural communities. It is worth noting that these homes are all located in Large and Medium villages.

Table 6: Average Market Price for Single-Story House by Rural Community

	Total Communities		Large and medium communities		Small communities	
	%	%, cumulative	%	%, cumulative	%	%, cumulative
Up to USD 1 000	13.6	13.6	6.3	6.3	35.3	35.3
USD 1 000-3 000	29.8	43.4	25.6	31.9	42.0	77.3
USD 3 000-6 000	27.0	70.4	31.1	63.0	15.1	92.4
USD 6 000-10 000	17.4	87.9	21.1	84.0	6.7	99.2
USD 10 000-15 000	5.3	93.2	7.1	91.2	0.0	99.2
USD 15 000-20 000	5.1	98.3	6.6	97.7	0.8	100.0
Above USD 20 000	1.7	100.0	2.3	100.0	0.0	100.0

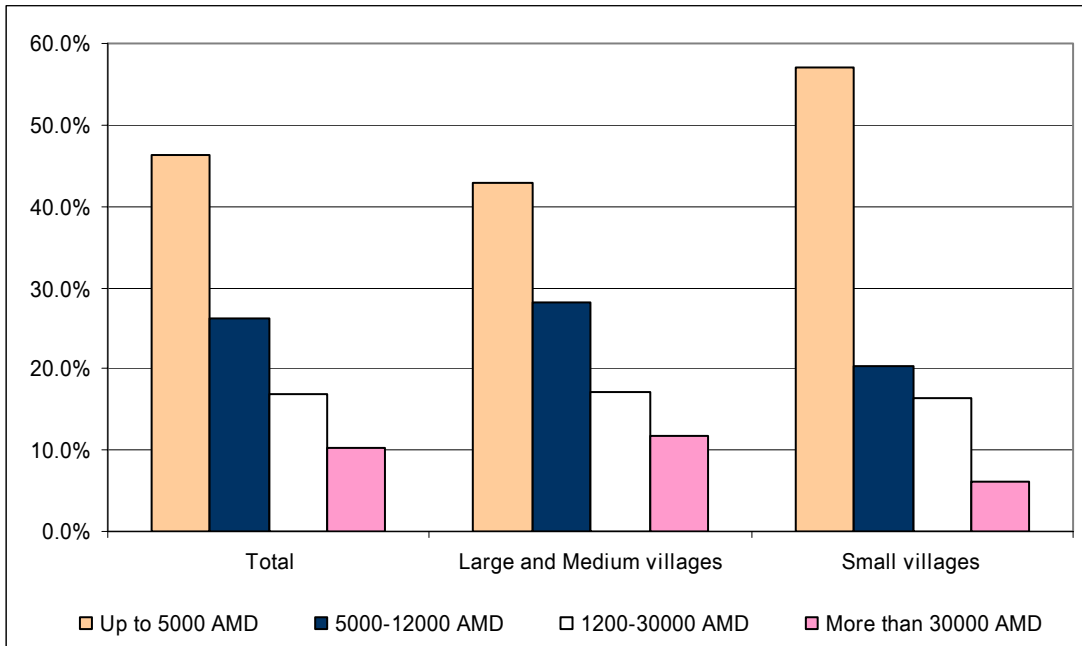
The majority of houses in the range of USD \$6,000-\$10,000 are in villages located in valleys. The lowest share of houses above USD \$10,000 are in Mountainous villages.

Figure 14: Average Market Price for Single-Story House (share by group, percentages)



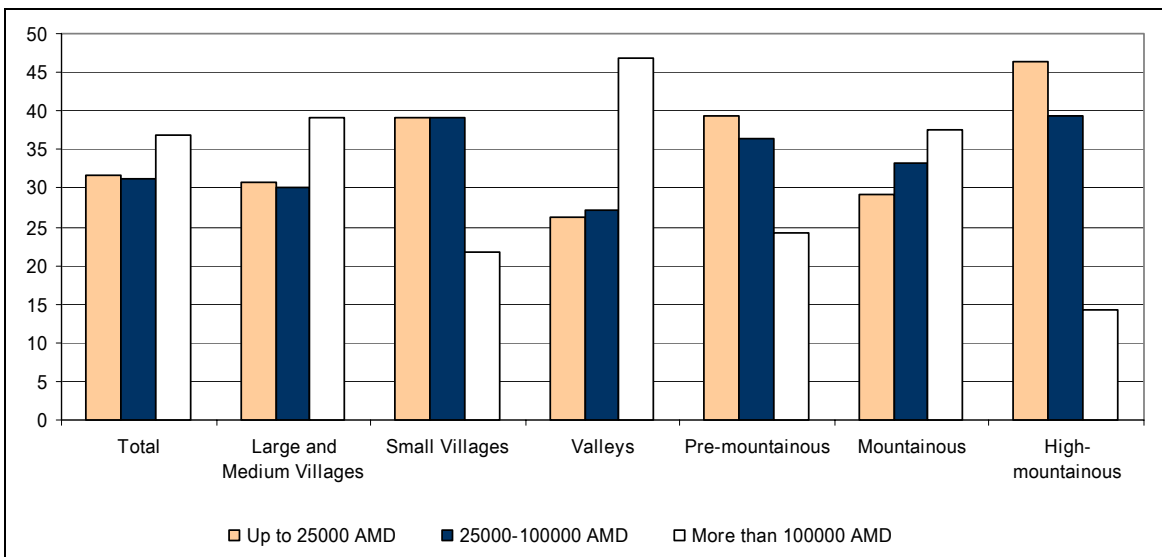
In the majority of rural villages, housing rents are very low. In 45 percent of all villages, the price does not exceed AMD 5,000 per month, provided the supply is competitive or there are any rental transactions made.

Figure 15: Average Rent for Single-Story House (share by group, percentages)



The survey also revealed that the prices paid for agricultural land vary significantly, depending on the size of the community and its altitude. As a whole, the prices for land in Large and Medium villages in valleys are high. The lowest prices were recorded in High-Mountainous communities. It is worth mentioning that, in contrast to Pre-Mountainous villages, prices for agricultural land are more expensive in a majority of Mountainous villages.

Figure 16: Sale Price for 1ha Agricultural Land (Percentage, by respective group)

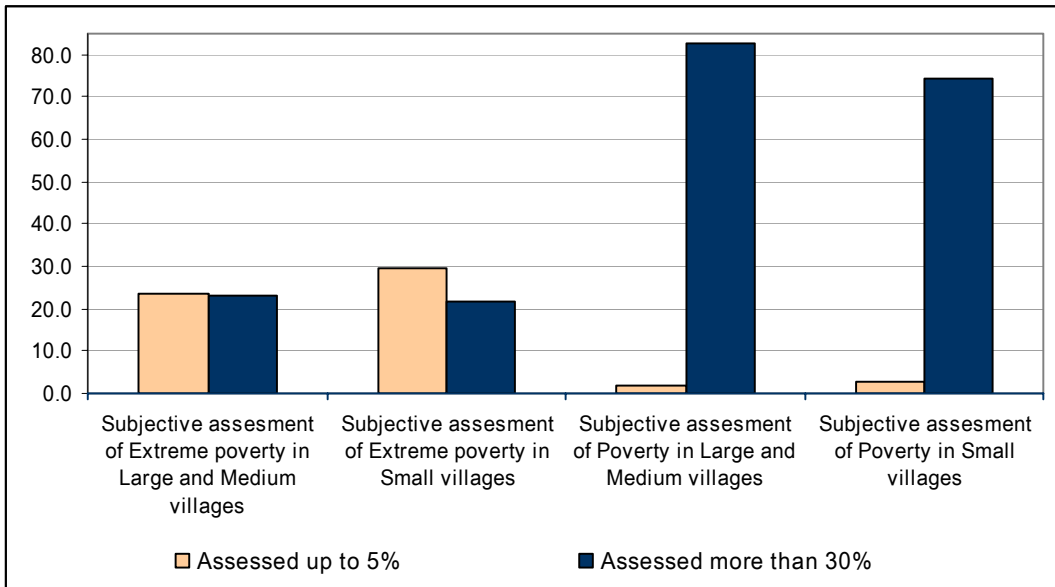


Subjective Assessment of Poverty and Social Services

The responses to questions about the subjective assessment of poverty and extreme poverty are very pessimistic. According to official statistics, poverty in rural Armenia was 28 percent in 2005 and extreme poverty was recorded at 3.2 percent. Assessments by more than 20 percent of community leaders (or officials in charge) indicated that extreme poverty in their communities equals 30 percent.

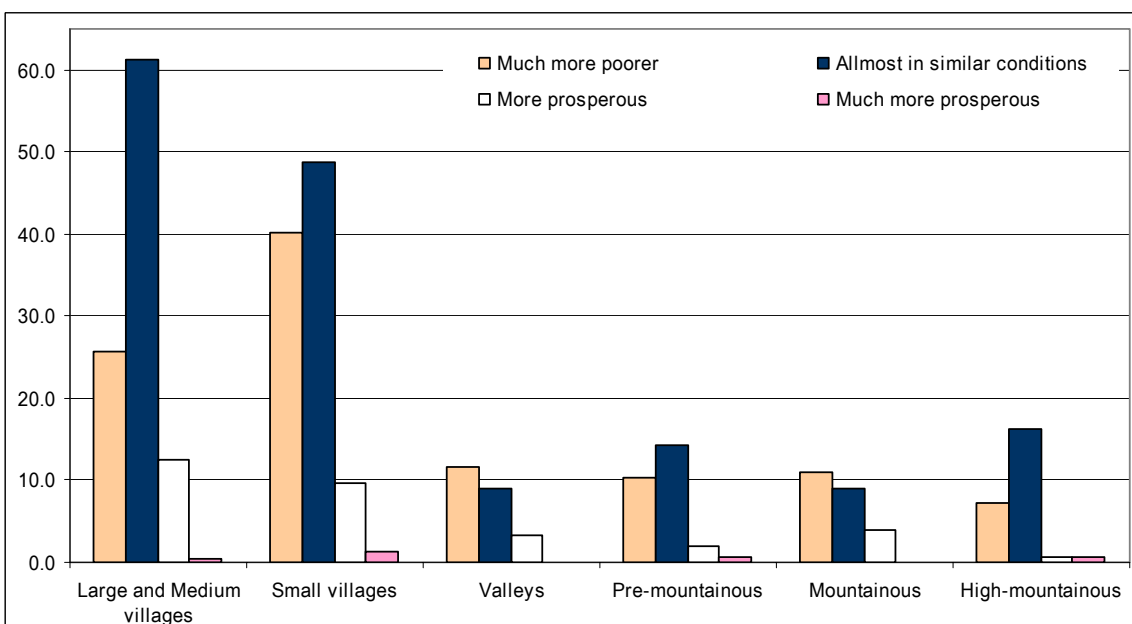
Only 30 percent of community leaders in Small communities and 24 percent of those in Large and Medium communities evaluated extreme poverty in their communities at 5 percent or less.

Figure 17: Number of Poor Households in a Community (Subjective Assessment)



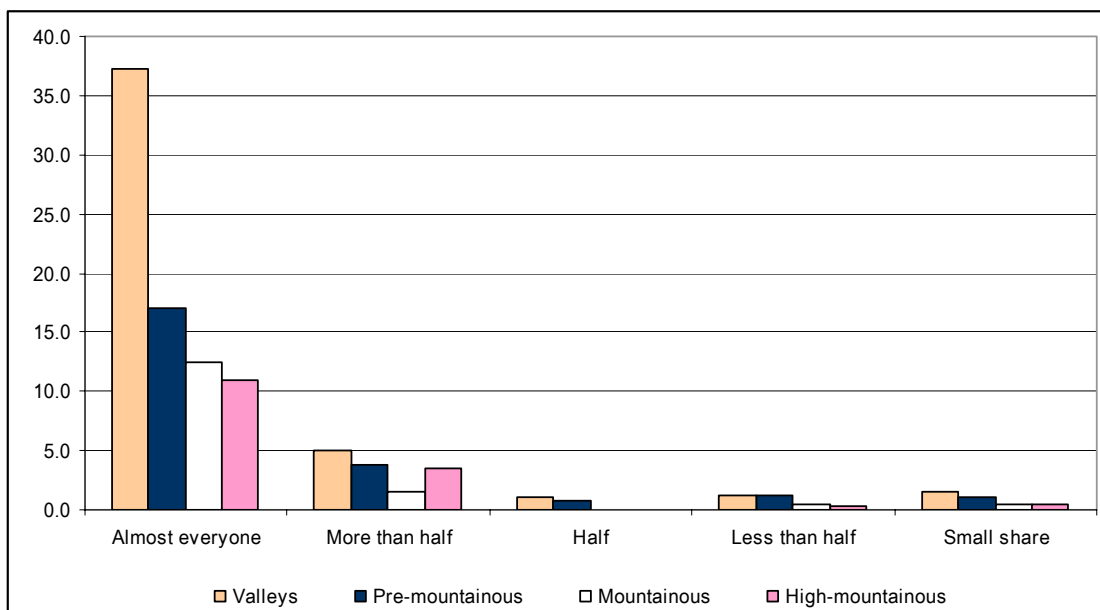
Nevertheless, about 61 percent of Large and Medium village leaders and 49 percent of those leading Small Villages perceive the welfare of their community as similar to neighboring villages. Twenty-six percent of Large and Medium communities mentioned that their community is poorer than neighboring communities, whereas among Small communities, 40 percent made a similar assessment.

Figure 18: Subjective Assessment of a Community's Welfare in Comparison to Neighboring Communities



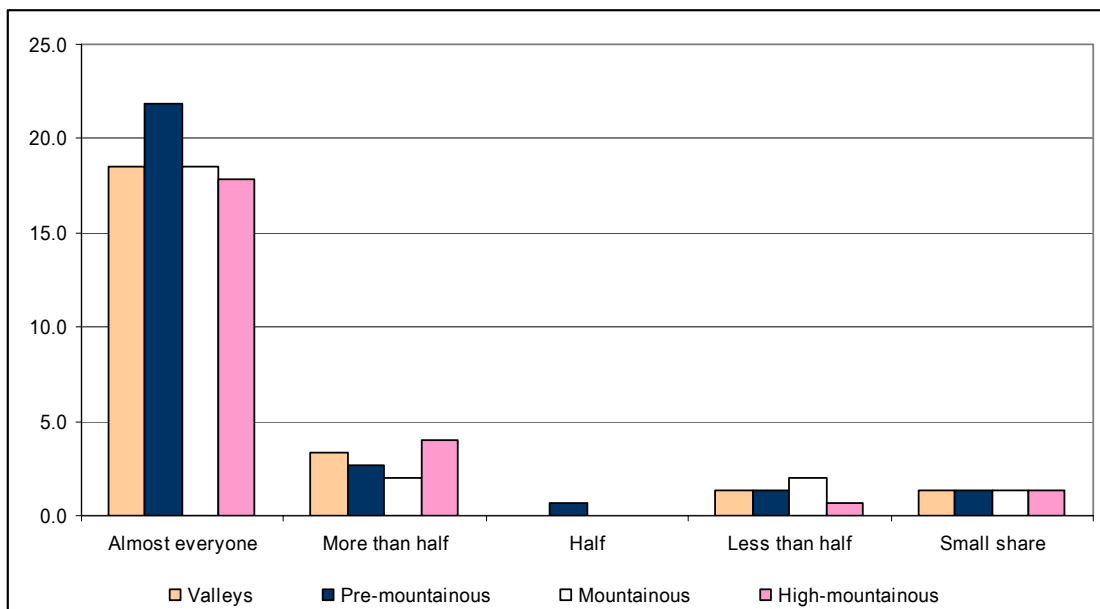
According to the majority of community leaders, almost everyone who receives Family Benefits are, indeed, poor. Only 7 percent of Large and Medium communities and 11 percent of Small communities believe that more than half of those included in the Family Benefits program are not poor.

Figure 19: Subjective Assessment of the Poverty of Family Benefits Recipients, Large and Medium communities



Community Heads in Large and Medium villages on valleys believe that almost all households in their communities receiving Family Benefits are poor and needy.

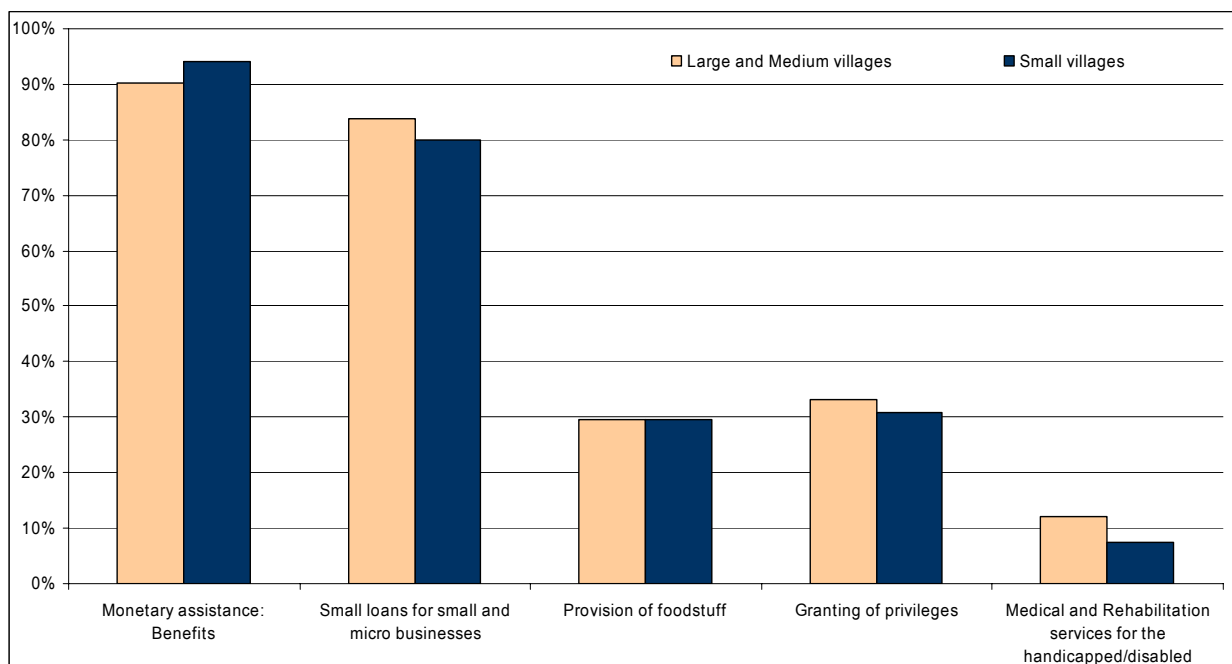
Figure 20: Subjective Assessment of the Poverty of Family Benefits Recipients, Small villages



Family Benefits and, in general, financial support, are considered the most needed and important social service. More than 90 percent of community leaders mentioned them.

The second most needed social service is loans for small- and micro-businesses. About 83 percent of communities listed this need. This type of social service was mentioned the most in villages in valleys and in Large and Medium communities. Privileges, as well as providing foodstuffs, were also mentioned as important social services. Regardless of the size, 30 percent of communities listed these services as priorities.

Figure 21: Priorities of Social Services



As a whole, monetary assistance and foodstuffs were mentioned as important in Mountainous and High-Mountainous villages, whereas villages in valleys gave higher priority to loans for small- and micro-businesses.

Services for the elderly, at home and in elderly houses, as well as around-the-clock childcare, temporary shelters and psychological services to the disabled were deemed as not very important. The table below summarizes the priorities of potential social services, categorized from highly important to unimportant.

Table 7. Assessment of Social Service Priorities

Service type	Priority number	Priority category
Monetary assistance: Benefits	1	Highly Important
Small loans for small and micro businesses	2	Highly Important
Granting of privileges	3	Important
Provision of foodstuff	4	Important
Medical and Rehabilitation services for the handicapped/disabled	5	Less Important
Legal advise	6	Less Important
Round-the clock baby-sitting	7	Almost Unimportant
Advice and Consulting on Social services	8	Almost Unimportant
Looking alter the elderly at homes	9	Almost Unimportant
Temporary shelter	10	Almost Unimportant
Services of elderly houses	11	Unimportant
Psychological services to the handicapped/disabled	12	Unimportant

C. Methodology of Community Classification and Grouping

Urgency

Since there are significant differences among Armenian communities, it is possible that, *ceteris paribus*, these variations determine the differences in the living standards between households: they may be significant from the perspective of efficient evaluation of household vulnerability.

Currently, the Family Benefits system evaluates community differences. In general, households need to reach a vulnerability score which exceeds a set threshold to be included in the Family Benefits system or receive benefits. The vulnerability score also includes a parameter which describes the "score" of the community. The community score or coefficient allows two households that have the same social demographics and economic characteristics (sum of all parameters included in the evaluation score calculation) to receive different final scores if one of the households is located in a poorer community. In other words, the poverty of the community increases the probability that a household should be included in the Family Benefits system (Kr coefficient.)

At the same time, community parameters help in determining the amount paid under the Family Benefits system. The current formula provides higher benefits be paid to poor households in High-Mountainous and border communities as compared to poor households in other areas. In fact, this is not a purely social policy issue, but also contains regional management elements.

The two approaches are very different: the first one addresses the question of *who should be included* in the social assistance net, whereas the second one – *how to ensure equity*.

Inclusion of the community coefficient in the formula and parameters for evaluating the poverty of a household imply that poverty characteristics in different regions and communities are different. Therefore, the criteria used are different, too. For example, a household in one community may be considered poor (from the viewpoint of the Family Benefits system), while in another community the same household (with the same or similar characteristics and circumstances) may not be considered poor. Households with the same level of assets, income, capacities and skills would have similar minimum needs; however, the possibilities of satisfying those needs may vary depending on the community (e.g., absence or distance from infrastructure, prices, and different opportunities for asset deployment or income generation.) In other words, it is feasible that one household will be able to satisfy its basic needs, while another cannot. Therefore, the second household should be considered poor from a social assistance viewpoint, while the first household may need less or no assistance. This approach is well justified if the type of social assistance provided is not homogeneous and only available by a limited method. Otherwise, both households in this example should remain out of the Family Benefits system or have similar opportunities for inclusion. Meanwhile, another family may not satisfy its basic educational needs, for example, due to the absence of or distance to a school. In this case, the family should be eligible for reimbursement of transportation expenses as an alternative type of social service.

In fact, assessment of community specifics and their classification becomes a priority for social policy because it can improve its efficiencies. In other words, it is feasible to have a diversified approach to providing social services in different communities. This is important from two aspects. First, community specifics or the conditions of the settlement area can be decisive in terms of beneficiary inclusion in the system. Second, community specifics or conditions are crucial in determining how to ensure equal and fair conditions for beneficiaries receiving social services.

Although community coefficients are used solely in the Family Benefits system, we recommend using a similar diversification approach when developing the vision for other social services.

The methodology recommended under this study is universal and general. It aims at creating categories or classes of communities and then assessing common social and economic characteristics of those communities that impact the welfare of its households. Categorizing allows grouping among types of social services or assigning relevant coefficients for each class for specific issues and problems.

Methodology

The recommended methodology aims at revealing whether community specifics do affect the living standards of households and trigger differences therein when other things are equal. At the same time, this approach categorizes the communities into classes that can be differentiated or grouped later, if necessary, depending on the problem, budgetary or other restrictions, etc. by assigning differentiated coefficients to each group.

In order to reveal and assess community specifics, we first drew hypotheses on how the communities or households therein can be differentiated as compared to the national average or base indicators. After defining the hypotheses, the test variables were determined: actual data for the test indicators were collected through the Community Survey. The significance of the variables and initial hypotheses were tested by analyzing collected data. First, each hypothesis was assigned a value. Second, the variables were tested for each hypothesis. If the test variables did not change significantly for the hypothesis values or they were not affected, then the hypothesis was not significant or should be rejected.

Each rejected or insignificant hypothesis was left out. For the proven ones, the sum of the significant coefficients per values of each hypothesis either improved or worsened the comparative position of the community with others within the given combination of hypotheses. For example, communities that are more significantly affected by the hypotheses are given a higher score. Other things being equal, the differences between communities show that living standards of poor households in a community with higher scores are lower than those of similar households in communities with higher scores. The details of the methodology, hypothesis and their values are given in Annex 1.

Formulation and Testing of Hypotheses

Various studies and data were reviewed and analyzed, as well as meetings and consultations held to formulate hypotheses. As a result of the collected data, discussions with community leaders and regional social assistance offices, and expert assessments, we formulated the following four hypotheses on correlation between poverty and living standards and community specifics:

- Hypothesis 1. The factors triggering poverty increase and strengthen with the altitude of the community.
- Hypothesis 2. The factors triggering poverty in rural communities increase and strengthen depending on population.
- Hypothesis 3. The factors triggering poverty increase and strengthen according to the community's distance from the capital.
- Hypothesis 4. The factors triggering poverty increase and strengthen according to the community's distance from its former regional center.

Based on the results of the survey, values were assigned to the formulated hypotheses, with two to four values for each hypothesis (listed below).

	Value 1	Value 2	Value 3	Value 4
Hypothesis 1	below 1300 m	1301-1700 m	1701-2000 m	2001 m and higher
Hypothesis 2	Population of less than 500	Population of more than 500	---	---
Hypothesis 3	Less than 50 km	51-100 km	101-150 km	More than 151 km
Hypothesis 4	Less than 5 km	6-15 km	16-30 km	More than 31 km

Values for Hypothesis 1 are determined using a scientifically acceptable classification and RA Government Decree No. 756 dated November 27, 1998. Values for the other three hypotheses are based on analyses and expert assessments. According to the survey results, below are presented the test factors for each hypothesis.

Factors of Hypothesis 1

- The number of those who leave for employment in other countries increases with altitude. This speaks about the lack or absence of opportunities to generate income in communities located in high elevation areas, promoting emigration from these communities.
- The sale and rent prices for land and houses vary depending on altitude (i.e., similar assets that generate and do not generate income differ significantly.) Therefore, the capacity of assets to generate income decreases at higher

altitudes and the demand for real estate drops. This speaks about lower purchasing capacity of the population and, as a consequence, about intentions to live and to work in other places.

- The duration of the heating season varies, depending on altitude above sea level. Longer heating seasons require higher expenses for energy consumption. In some cases, these expenses may constitute up to 25 percent of a household's expenditures.
- The largest variation was recorded in the annual income from the most widely cultivated crop. In valleys, it exceeds the same indicator of mountainous areas by about three times. This is the main variable confirming Hypothesis 1.
- And, as a consequence of the discussed factors, the assessment of extreme poverty by community leaders varies significantly depending on the altitude of the community.

Factors of Hypothesis 2

The tested hypothesis is: poverty factors in small communities are much stronger than in large communities. Data on large communities were taken as base data and small communities' data were compared to them. The test variables included:

- Asset prices vary significantly. Sales and rent prices for land and houses are significantly lower in small communities. This is explained by lower demand which is a consequence of continuous decreases in the population: large numbers of emigrants are apparent.
- One unfavorable factor for small communities is segregated land lots. Land owned by a household consists of, on average, four separate lots. This fact decreases efficiencies and increases cultivation costs. Of course, the total area of land owned by a household in small communities is larger than in large communities; however, the quality of soil, as well as irrigation services in small communities are much lower than in large communities (see Annex 1).
- Another important factor for small communities is the lack or absence of social and economic infrastructure and services. Access to these infrastructure and services in small communities is about 50 percent lower than in large ones. This implies either an absence of some services which "support" extreme poverty or these communities have to satisfy their demand for such services in neighboring communities, thus increasing household expenditures. Low household expenditures in small communities are partly explained by the lack or absence of a variety of services, as well as by the use of modified forms of a barter economy.

Factors of Hypothesis 3

The tested hypothesis is: Longer distances from Yerevan increase poverty. Parameters of villages within 50 km of Yerevan were taken as a base. The most significant among all potential factors were:

- Apparently, distance from Yerevan brings about a lack or even an absence of certain services and socio-economic infrastructure, as well as decreases the connection or access to centralized (drinking and irrigation) water supplies and the gas supply grid. These factors increase incidences of poverty and the factors affecting it. This also explains the gradual decrease in the amount necessary to survive. Simply, no sufficient services and institutions are available where income could be spent. On one hand, no income is generated nor are jobs created in the service sector. On the other hand, households do not have access to services and do not spend money on them. Access to centralized water and gas supplies also reduce income generation opportunities and increase expenditures.
- Variations in asset leases and sale prices are prominent. This proves that assets and income are concentrated and not distributed proportionally.
- Only in communities around Yerevan do community leaders believe that the number of people in their communities will not change during the next five years. In other villages, community leaders are more pessimistic. Perhaps this will result in villages far from Yerevan gradually emptying, thus worsening and isolating the poverty situation in remote communities. Households nearer to Yerevan villages also assessed their living standards as better than in other communities, whereas the leaders of remote communities expressed the opposite opinions.

Factors of Hypothesis 4

According to this hypothesis, the impact of factors creating poverty in a community strengthens along with the increase in distance from the former regional center. Parameters of villages within 5 km from those former centers were taken as a base. There were few significant factors here; most of them already were addressed under Hypothesis 3. The major factors for this hypothesis were:

- Access to social and economic infrastructure and services. This decreases significantly when moving farther from the regional centers, while the poverty factors increase in parallel, along with increases in expenditures and decreases in income generation opportunities. Connection to the gas supply system has a similar impact, decreasing drastically when located farther away from these regional centers.
- Distance to a First Aid Medical station and a gas station increase household expenditures. This is closely related to a community's access to public transportation and prices paid for that access.
- The pessimism of community leaders with regard to population growth in the future increases the farther a village is from its regional center.

According to the results of analyses (see Annex 1), the significance of this hypothesis is mostly explained by the distances from First Aid and gas stations. The lack of these services should not be reimbursed through social policies. If we ignore these two variables and test the hypothesis against other variables, Hypothesis 4 becomes too weak when compared to the first three hypotheses.

The fact that there are too few variables under this hypothesis—and most of them are the same as the variables of Hypothesis 3—compels us to refrain from further discussion of Hypothesis 4. The first three hypotheses are very significant and considered as accepted (see Annex 1).

Classification of Communities

Based on the coefficients of the test variables of the accepted hypotheses, we determined values for the initial scores or categories of the hypotheses. The best or highest score for each hypothesis is considered as base. For Hypothesis 1, the base will be communities in valleys. Hypothesis 2 includes Large and Medium communities, while Hypothesis 3 includes villages within 50 km of Yerevan. The table below and Annex 1 (in detail) describe the values assigned to the hypotheses categories.

Hypotheses	Values
Valleys	0
Pre-Mountainous	2.4
Mountainous	3.5
High-Mountainous	2.9
Total for Hypothesis 1	8.8
Large and Medium	0.0
Small	3.4
Total for Hypothesis 2	3.4
Within 50 km from Yerevan	0.0
Within 51- 100 km from Yerevan	3.0
Within 101-150 km from Yerevan	2.8
Within more than 151 km from Yerevan	3.9
Total for Hypothesis 3	9.6

In Mountainous communities, poverty factors often have a larger variance (depending on altitude) than in High-Mountainous communities. This was already noted in the analyses presented in Section B. As compared to the villages in valleys, Mountainous communities are more vulnerable than High-Mountainous communities (by a value of 0.6). This can be explained, first, by fact that the regional policy of the government has started to orient towards High-Mountainous communities, whereas Mountainous communities have similar conditions and problems. As a result, the infrastructures, as well as asset prices in Mountainous villages, now are worse than in High-Mountainous villages. At the same time, these two categories are worse than the Pre-Mountainous villages, which is quite logical. Nonetheless, we decided to take the average value (3.2) for Mountainous and High-Mountainous communities.

This approach was used also for the second and third categories of Hypothesis 3 since their significance was quite similar. Such grouping will reduce the number of combinations and categories of communities. Thus, by grouping and averaging the communities within 51-100 km and 101-150 km from Yerevan, we obtained a value of 2.9 for all communities within 51-150 km from Yerevan.

In all other cases, the obtained values of the hypotheses' categories were quite logical and match our expectations. We can already construct all possible combinations and determine their positions: those will be the categories of communities.

Community Categories (possible combinations of the Hypotheses)	Value	Position
Valleys, large villages, within 50 km from Yerevan	0	1
Valleys, large villages, within 51-150 km from Yerevan	2.9	3
Valleys, large villages, more than 151 km from Yerevan	3.9	6
Valleys, small villages, within 50 km from Yerevan	3.4	5
Valleys, small villages, within 51-150 km from Yerevan	6.31	11
Valleys, small villages, more than 151 km from Yerevan	7.3	14
Pre-Mountainous, large villages, within 50 km from Yerevan	2.4	2
Pre-Mountainous, large villages, within 51-150 km from Yerevan	5.3	7
Pre-Mountainous, large villages, more than 151 km from Yerevan	6.27	10
Pre-Mountainous, small villages, within 50 km from Yerevan	5.8	8
Pre-Mountainous, small villages, within 51-150 km from Yerevan	8.7	15
Pre-Mountainous, small villages, more than 151 km from Yerevan	9.7	17
Mountainous and High-Mountainous, large villages, within 50 km from Yerevan	3.2	4
Mountainous and High-Mountainous, large villages, within 51-150 km from Yerevan	6.1	9
Mountainous and High-Mountainous, large villages, more than 151 km from Yerevan	7.1	13
Mountainous and High-Mountainous, small villages, within 50 km from Yerevan	6.6	12
Mountainous and High-Mountainous, small villages, within 51-150 km from Yerevan	9.5	16
Mountainous and High-Mountainous, small villages, more than 151 km from Yerevan	10.5	18

Thus, the lowest value – zero - will be assigned to those communities that fall into the group of Large and Medium communities located in valleys within 50 km of Yerevan. Meanwhile, the highest value will be assigned to the group of Small, Mountainous and High-Mountainous villages situated more than 150 km from Yerevan. The value of this second group equals 10.5 (3.2 + 3.4 + 3.9).

From the policy perspective, we recommend using the same categories for grouping - per their position numbers.

We propose 18 categories: communities in the first category (zero value) will be considered as having the best conditions and, respectively, the ones in the last or 18th category (value of 10.5) as the worst.

If the provision of a given social service requires classification and diversification of communities, one can easily group the communities using the table below.

Position	Community Categories	Values
1	Valleys, large villages, within 50 km from Yerevan	0
2	Pre-Mountainous, large villages, within 50 km from Yerevan	2.4
3	Valleys, large villages, within 51-150 km from Yerevan	2.9
4	Mountainous and High-Mountainous, large villages, within 50 km from Yerevan	3.2
5	Valleys, small villages, within 50 km from Yerevan	3.4
6	Valleys, large villages, more than 151 km from Yerevan	3.9
7	Pre-Mountainous, large villages, within 51-150 km from Yerevan	5.3
8	Pre-Mountainous, small villages, within 50 km from Yerevan	5.8
9	Mountainous and High-Mountainous, large villages, within 51-150 km from Yerevan	6.1
10	Pre-Mountainous, large villages, more than 151 km from Yerevan	6.27
11	Valleys, small villages, within 51-150 km from Yerevan	6.31
12	Mountainous and High-Mountainous, small villages, within 50 km from Yerevan	6.6
13	Mountainous and High-Mountainous, large villages, more than 151 km from Yerevan	7.1
14	Valleys, small villages, more than 151 km from Yerevan	7.3
15	Pre-Mountainous, small villages, within 51-150 km from Yerevan	8.7
16	Mountainous and High-Mountainous, small villages, within 51-150 km from Yerevan	9.5
17	Pre-Mountainous, small villages, more than 151 km from Yerevan	9.7
18	Mountainous and High-Mountainous, small villages, more than 151 km from Yerevan	10.5

Calculation of Community Coefficients in the Family Benefits System

The proposed methodology of community classification and obtained categories can be used for diversifying social services. For example, let's discuss the community coefficients used in the formula for poverty scoring of a household in a surveyed community. Currently, three groups or categories are defined and the coefficients for these categories are, respectively, 1, 1.03 and 1.05. It was assumed that a household in relatively worse off conditions will have a 5 percent greater chance of receiving Family Benefits than a household living in a better off community.

We took the same assumptions (three groups with a maximum 5 percent deviation). How can we use the categories to calculate the community coefficients?⁷ By using the table above, let's group the categories into three large groups taking into account their position in the list. The values of the coefficients will fall into three groups as well, with the highest positions assigned a higher coefficient.

The successive position of the categories shows the gradual variation in welfare. Therefore, the list can be divided into three groups (18 categories/three groups) by leaving six categories in each group. As a result, we have the following division of categories into groups.

Community groups	1st Group	2nd Group	3rd Group
Categories per positions in the Table	1, 2, 3, 4, 5, 6	7, 8, 9, 10, 11,12	13, 14, 15, 16, 17, 18
Community Coefficient Kr	1.0	1.03	1.05

By replacing numbers with the titles of categories in our table, we have a new classification table. Subsequently, one can calculate the community coefficient Kr for each community by using the respective combination. Annex 3 shows the groupings of 555 surveyed communities and their respective coefficients.

Community Groups	Community Coefficient Kr
Valleys, large villages, within 50 km from Yerevan Pre-Mountainous, large villages, within 50 km from Yerevan Valleys, large villages, within 51-150 km from Yerevan Valleys, small villages, within 50 km from Yerevan Mountainous and High-Mountainous, large villages, within 50 km from Yerevan Valleys, large villages, more than 151 km from Yerevan	1.0
Pre-Mountainous, large villages, within 51-150 km from Yerevan Pre-Mountainous, small villages, within 50 km from Yerevan Valleys, small villages, within 51-150 km from Yerevan Pre-Mountainous, large villages, more than 151 km from Yerevan Mountainous and High-Mountainous, large villages, within 51-150 km from Yerevan Mountainous and High-Mountainous, small villages, within 50 km from Yerevan	1.03
Valleys, small villages, more than 151 km from Yerevan Mountainous and High-Mountainous, large villages, more than 151 km from Yerevan Pre-Mountainous, small villages, within 51-150 km from Yerevan Pre-Mountainous, small villages, more than 151 km from Yerevan Mountainous and High-Mountainous, small villages, within 51-150 km from Yerevan Mountainous and High-Mountainous, small villages, more than 151 km from Yerevan	1.05

In some cases, considering parameters of a given community as very specific, but very serious, the category of the community can be different from the proposed one above. Coefficients of small towns can be determined by using the same table and considering them similar to large communities.

⁷ This is a tentative example since the number of community categories and the differences thereof come directly from the logic of the formula. Therefore, any change in the formula coefficient should be consistent with the analyses of modifications to the formula (which is outside the scope of this project.) For recommendations on how to improve the Family Benefits formula, see the "Improvement of Social Assistance Targeting in Armenia" policy recommendations paper, EDRC, Yerevan 2006.

Annex 1. Detailed Community Classification Methodology

For example, we set hypothesis on how the welfare of communities vary from each other. Each hypothesis can have up to j number of values. The best value is the first one, which serves as base for tasting or comparing control variables. The control variables (1 to n) are collected through the survey and calculated for each value of each hypothesis.

As a result of survey each hypothesis category will have a certain value or score that will show on how the values or categories of the hypothesis affect the factors (how elastic factors are against the categories of the hypothesis).

A table of the following format is then applied to each hypothesis:

Factors	Factor value per base and hypothesis categories (e.g., for Hypothesis 1 – villages on Valley, Pre-Mountainous, Mountainous and High-Mountainous) ⁸				Ratio of the summary average value to the base (in our case – villages on valleys) ⁹			Absolute deviation from base ¹⁰			Sum of variation of the factor per hypothesis categories
	VAL	PRM	MOU	HMO	PRM	MOU	HMO	PRM	MOU	HMO	
Factor 1	A	B	C	D	a= B/A	b= C/A	c= D/A	k1= ABS (1-a)	k2= ABS (1-b)	k3= ABS (1-c)	G1=SUM (k1:k3)
Factor 2	...										G2=SUM (i1:i3)
Factor 3	...										G3=SUM (Ñ1:Ñ3)
.....
Total								SUM PRM	SUM MOU	SUM HMN	G=SUM (G1:Gn*)

* Where n is the number of factors varying depending on the hypothesis categories.

G1, G2...Gn coefficients in this table show the magnitude of changes in each factor depending on the categories of the hypothesis (e.g., variation of real estate prices depending on the altitude groups).

During the preliminary analyses of the Survey database we selected the factors that vary significantly.

SUM PRM, SUM MOU, SUM HMN are summed coefficients showing the aggregate impact of the hypothesis categories on all factors in discussion (e.g. SUM HMO will show the aggregate variation of all factors in High-Mountainous category).

G aggregate coefficient shows the strength of the hypothesis, in other words, how well the hypothesis is justified or can be accepted. Hypothesis with smaller G will not participate in determining the categories of communities (e.g. the hypothesis with the lowest value or a hypothesis that was formulated under a random factor impact).

Subsequently, the categories of accepted hypotheses will be listed in accordance with their aggregate values (SUM VAL, SUM PRM,... SUM LARGE, SUM SMALL, SUM H(51- 150km)...).

⁸ For each factor, we selected to use simple or weighted average, mode, median, average of smoothed series, etc.

⁹ For each hypothesis, the base is considered to be the best or most favorable parameter. E.g. according to the hypotheses the living standards of large communities on valleys situated within 50 km from Yerevan and not far from the former regional centers are the most favorable.

This column in the analytic table shows the relative value of the variable in each group compared with the base (e.g. by what percent the prices for a single-story house is lower in High-Mountainous areas as compared to the communities on valleys).

¹⁰ Since the same trend (e.g. increase in poverty) correlates with positive changes in some variable and negative changes in others, we decided to use the absolute value of changes for our analyses in order to be able to determine the aggregate change in each factor in different categories of the given Hypothesis (otherwise negative and positive changes would neutralize the effects of each other).

Hypotheses categories	Impact of categories on all discussed factors
Valleys	$\alpha_1 = \text{SUM VAL} = 0$
Pre-Mountainous	$\alpha_2 = \text{SUM PRM}$
Mountainous	$\alpha_3 = \text{SUM MOU}$
High-Mountainous	$\alpha_4 = \text{SUM HMO}$
Large	$\alpha_5 = \text{SUM LARGE} = 0$
Small	$\alpha_6 = \text{SUM SMALL}$
Within 50 km from Yerevan	$\alpha_7 = \text{SUM H50} = 0$
Within 51-150 km from Yerevan	$\alpha_8 = \text{SUM H(51- 150)}$
More than 151 km from Yerevan	$\alpha_9 = \text{SUM H151}$

From here, we can have all possible combinations of factors. For example, Small community on valleys situated within 51-150 km from Yerevan will be assigned a coefficient using $(\alpha_1 + \alpha_6 + \alpha_8)$ formula.

After calculating all possible coefficients the combinations or community categories will be sorted by ascending coefficients. The lowest is 0 (Valleys, Large and Medium, close to Yerevan). The highest coefficients are obtained through summarizing the coefficients.