Designing a financing mechanism for inter-municipal allocation of resources for social services in Kosovo:

Discussion paper for development of a budget formula №3

Results of the statistical simulations and proposals of options for a new transfer formula

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Content

Background

1. **The goal of this modelling exercise is to assist the Governemnt of Kosovo to develop an effective financing mechanism to support the First Phase of Social Services Decentralisation in Kosovo (2009-2012).** Starting from 2009, the Government of Kosovo has launched a wide-scale process of decentralisation of social services to vulnerable population groups[1]. In the first phase of this process (2009-2012), the central government has transferred a share of administrative functions in the provision of social services to municipal administrations (broadly, the services provided by the Centers of Social Welfare (SCWs)).

2. **There are several open issues with regard to the optimal financing mechanism to cover decentralised social services.** Although the decentralisation process for social services has already started, the Government of Kosovo is still searching for a new and effective financial arrangement to cover decentralised provision of these services[2]. There are several central dimensions of such optimal financial arrangement which need to be clarified. These central open questions include:

    a. **How much the central government needs to pay?** To what extent the central government needs to take into account absolute costs of services and cover them? This dilemma was discussed in considerable detail in the previous discussion papers. They demonstrated that the extent to which the government is prepared to incorporate absolute unit costs into the grant formula reflects its policy decision about the degree of decentralisation, and whether respective services are devolved, delegated (in which case absolute costs need less weight or should be excluded altogether) or deconcentrated (in which case absolute unit costs need more weight).

    b. **Should this amount (transfer) be ring-fenced from other spending programmes?** During the first three years after CSWs were transferred to municipal competences, the central government was covering this transfer with a Specific Social Services Grant, which was earmarked for these expenditures only. However, starting from the 2012 Budget debates, this approach was called for reconsideration. There were two major reasons for this change: one was concerned with growing macro-fiscal risks and the dangers of open-ended transfer commitments; the other was related to the political commitment to transfer social services into “Own Municipal Competencies” which should be funded, in theory, from the general grant. However, growing difficulties in securing resources for social services within local budgets have raised a debate about whether it would be more strategic to retain some earmarking for the funds allocated to social services provision. Options for this include a resurrection of a specific Social Services grant or a notional allocation of funds for social services within the General Grant.

    c. **How the central government should allocate these resources across municipalities?** Most controversially, once the overall amount of funding for the

[1] The decentralised way of providing social care services is one of the core commitments of the strategic vision of social risk management and public service delivery in Kosovo set out in the Ahtisaari Plan and the European Partnership agreements.

[2] During 2009-2011, the Government of Kosovo applied temporary practical rule for allocation of the Specific Social Services Grant, which divided its amounts based on the historical amounts of spending on this programme by the MLSW (that is , for 2008)(18)(19). This transitional approach essentially implied continuation of funding for CSW from the central budget based on the historical pattern of spending, and was therefore inappropriate to facilitate the core goals of the decentralisation agenda, which assumed a shift of financial, administrative and managerial power down to the municipal level.

social service function has been defined, the central government needs to define exact amounts of transfers for the individual municipalities.

3. **The purpose of this work is to conduct economic and statistical analysis to develop options for a formula for vertical and horizontal equalisation for social services.** In reality, all the three core questions outlined above are linked together in one decision about what formula should be used to allocate the resources (Will it contain absolute estimate of costs? Will it describe a general or earmarked transfer? And what criteria, or variables, it will use to allocate transfers horizontally (that is, among individual local budgets)?) However, to find accurate answers to these questions it is important to address them separately and sequentially. In this paper, we discuss all these three questions in turn, but focusing mostly on the less political questions of vertical and horizontal equalisation ((a) and (c)).

Approach to development of the vertical equalisation component of the formula

Policy decisions about the degree of decentralisation of social services in Kosovo and whether absolute costs of their provision should be incorporated into the formula are outside of this analysis. For the purposes of these simulations, we assume that social services would be decentralised as own competencies as is currently specified in the Kosovo legislation. Therefore, the formula options discussed in this analysis are focused entirely on horizontal equalisation. It means that the overall amount of resources which would be dedicated to cover vertical gap in service funding is taken as exogenous.

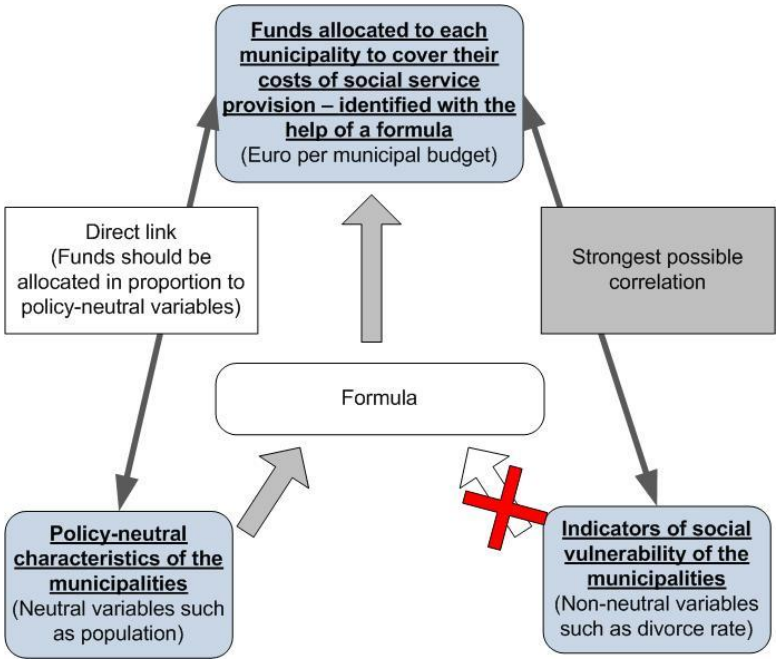
Approach to development of the horizontal equalisation component of the formula

4. **The future formula has to comply with two key requirements:**

    a. **It has to be based on policy-neutral variables.** Ideally, allocation of resources across municipalities to fund decentralised services needs to rely on policy-neutral indicators. In defining criteria for dividing resources across sub-national budgets for delivery of decentralised programmes, it is critical to base allocation decisions on variables which are "local policy neutral", so that the resource allocation process does not create financial incentives for the local authorities to increase their allocated share by influencing respective variables. For example, if funds for long-term care for the elderly were divided based on the amounts of residents of elderly homes in each region, this would create an incentive for each region to increase the share of people receiving such residential services (which is not always efficient and not always brings best value to people) rather than try to redirect resources into alternative forms of long-term care (e.g. community based care).

    b. **It has to result in a distribution of resources which would correlate as strongly as possible with the current spatial pattern of social vulnerability in Kosovo.** I is true that "objective" and policy-neutral variables are more suitable as resource-allocation criteria given that they are much more difficult to influence at the local level. In the example with funding long-term care, if funds on these services were divided based on population numbers, they would be much more difficult for local authorities to influence. However, variables such as population – which are the easiest to use – are not always accurately capturing objective differences between the regions in the cost of providing services and in the objective barriers to inclusion and thus disparities in the demand for services. Our task is to construct the formula in such as way that it would not include indicators of social vulnerability per se, but which would help to arrive at a distribution which would match the distribution of the vulnerability (as illustrated in Figure 1).

Figure 1. Requirements to correlation between variables in the formula design



Overview of data

5. **Access to statistical data is rather limited in Kosovo, for a range of technical and political reasons.** This analysis relies on a set of indicators which is rather limited and far from complete. Available data, as well as the data limitations, are described below.

6. **List of data sets (sources):**

   - Fiscal data
   - Preliminary Census Data
   - This analysis relies on social and demographic statistics which is available in the public domain at the website of the Statistical Office of Kosovo within its period publications. These reports include: Kosovo Education Statistics (2009-2010), Wedlock Statistics and Statistics of Divorces (2010), Statistics of Deaths and Births (2010), as well as the Preliminary Census Results revealed in 20101.
   - HBS

7. **The above specified list of sources has provided this analysis with the following types of information in the required municipal breakdown:**

   - Fiscal data and budget allocations. Simulations are based on the historical data on the amounts of transfers to municipal budgets in 2009-2011 and budgeted amounts for 2012.

   - Policy-neutral characteristics of the municipalities. The limited amount of such indicators included:

     - Population of the municipality;
     - Age and gender structure of the population;
     - Ethnic structure (share of minority ethnic groups) of the population;
     - Rural/Urban structure of the population;
     - Land area of the municipality.

- Social vulnerability indicators across municipalities. A range of data on social vulnerability available from the HBS and demographic surveys could be presented across five major domains:
  - Life-cycle social risks, related to childhood[3],
  - Life-cycle social risks, related to elderly[4],
  - Low living standards and economic deprivation[5],
  - Income insecurity[6],
  - Other risks of social exclusion[7].

8. **Data sets used in this exercise suffer from a range of weaknesses and limitations, discussed below:**
   - **Limited types of data available to this analysis (no access to comprehensive data from HBS and no access to LFS).** Municipal level data from other surveys such as Labour Force Survey and Household Budget Survey were available only in a very limited amount. The LFS data was not available, and the HBS data was available only for a specified range of variables.
   - **Some of the municipalities are covered very poorly by the available statistics.** Four municipalities (Leposavic, N.Mitrovica, Zvecan, and Zubin Potok) are not covered by the Preliminary Census Results (so there is no recent population data for these communities). In addition, data on these and several other municipalities for some of the key demographic variables in the SOK reports is not available (Gracanica, Kllokot, Partesh, Raniluk, and N.Mitrovica). The HBS data is also not complete: it does not cover Gracanica, Kllokot, Partesh, Raniluk, N.Mitrovica, and Novoberd. On top of that, fiscal data set has some gaps, such as missing data on own source revenues for Partesh and N.Mitrovitsa.

Table 1. Gaps in the statistical data set used in this analysis

	Fiscal Data	Preliminary Census Data	Demographic variables in SOK reports	HBS
Novoberd				No data
Gracanica			No data	No data
Kllokot	Gaps		No data	No data
Leposavic	Gaps	No data		
Partesh	Gaps		No data	No data
Raniluk	Gaps		No data	No data
Zubin Potok	Gaps	No data		
Zvecan	Gaps	No data		
N. Mitrovica	Gaps	No data	No data	No data

[3] Share of households with more than 3 children (average amount of children per household = 2.67); Family breakdown: share of households with children headed by single, divorced or widowed persons; Rate of divorce; Average level of household spending on children (per child); Amount of children born to mothers aged 15-19.

[4] Share of households comprised exclusively of people aged 65+ (living without children).

[5] Share of households living in significantly damaged housing; Share of households living without running water; bathroom in the house; and central heating; Average share of spending on utilities and housing maintenance in overall household budget.

[6] Average share of social benefits and relatively unstable sources of income in overall household budget (per diem work, rent/dividends/gambling); Average share of medical spending in overall household budget; Share of households suffering from catastrophic medical spending (healthcare spending > 40% of household budget)

[7] Share of households headed by persons with low education (less than secondary or vocational); Rate of dropouts in primary and secondary education; Share of disabled persons; Average share of spending on harmful practices (alcohol, tobacco, gambling) in overall household budget; Rate of violent deaths.

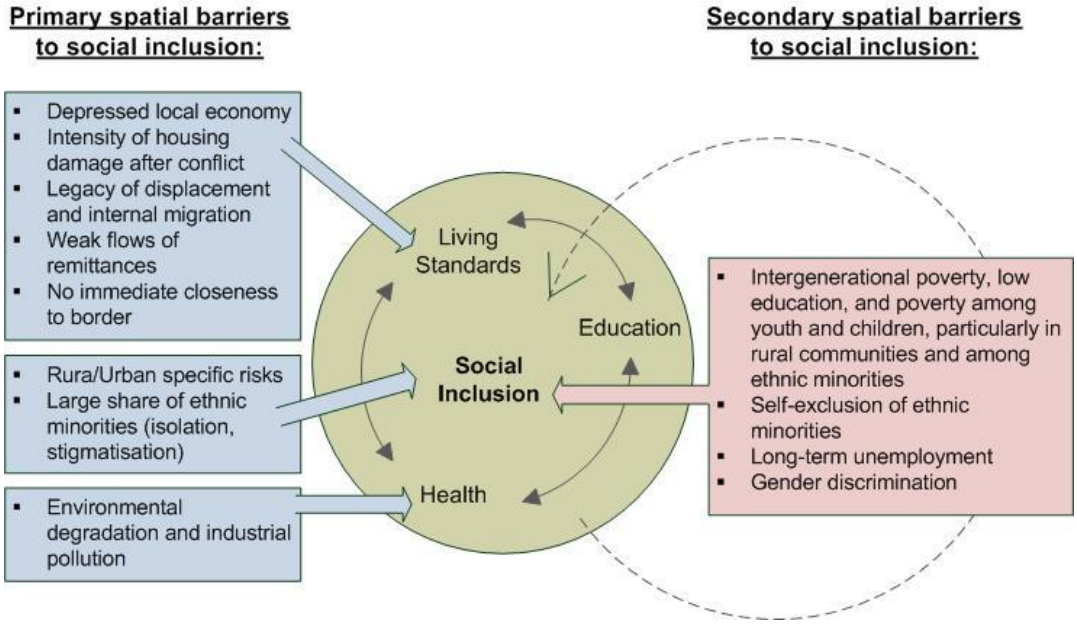
Results from Step 1: Statistical simulations to construct measurable markers of social vulnerability

If the desired transfer distribution has to match social vulnerability pattern, the first task is to construct an operational measure of social vulnerability. In order to design a formula which would result in a distribution of resources which matches the distribution of social vulnerability, the first task is to construct a measure of such vulnerability. This measure – or set of measures – of social vulnerability would serve as a benchmark for assessing the adequacy of the transfer distribution: does a resulting formula lead to a set of transfers which correlates with the levels of vulnerability in respective municipalities, or not?

Social vulnerability in Kosovo is a mix of primary and secondary factors, all of which are complex and contextual. As was discussed in several previous papers, the concept of social vulnerability is complex, elusive, and highly contextual (Figure 2). The Review of previous studies of poverty and social exclusion in Kosovo showed that in this country spatial pattern of vulnerability is a product of two factors:

- **Certain geographical barriers are objective.** On the one hand, there are "primary" geographical barriers to inclusion, which create objectively limiting circumstances for respective municipalities to participate successfully in factor and product markets, and to live up to their social potential. These include environmental barriers (land degradation and industrial pollution), urban/rural specific risks (although both urban and rural populations in Kosovo face significant social vulnerabilities, albeit of different kind), legacy of the war (in the form of housing damage and the experience of displacement), and lack of physical access to economic assets such as close distance to border (which facilitates cross-border trade), centres of economic activity, or large remittance flows.
- **Other social risks develop as a result of unfavourable social reactions and practices.** On the other hand, there are "secondary" factors of social exclusion, which have specific geographic dimensions and an objective spatial profile, but which have emerged as a result of local mechanisms and cycles of exclusion and continue to perpetuate poverty, harmful cultural attitudes, gender discrimination and poor educational and health outcomes. An example of such barrier is self-exclusion of some groups and communities from economic and education systems and exchange.

Figure 2. Classification of spatial factors of social vulnerability



For the formula-related simulations, we need to cover social risks which are sufficiently composite and could be described with available data. For the purposes of our work, we need a measure of social vulnerability which would represent an already materialised social risk (so, it would have to combine primary and secondary types of indicators), have a clear spatial dimension (would be measurable at the level of municipalities), and would rely on the already available statistical data.

There are at least two alternative ways of constructing composite measures of vulnerability with the limited data:

- **Imposed vision of how available indictors are linked to each other (which we use as a supplementary approach).** One option is to impose a certain vision of linkages between available statistical variables and calculate some resulting combined index or several indexes of social risks. The weakness of this approach is that it relies so much on the analyst's idea of the linkages between variables, and can produce a misleading picture of social vulnerability – especially if the initial set of data is rather limited or biased in the first place. The benefit of such analysis, on the other hand, is that it is convenient for production of *ranking* indices, i.e. measures which are most useful for describing relative ranks of municipalities against each other.

- **Exploratory statistical analysis to identify latent structure of unobserved factors behind observed variables (which we use as our major approach).** The method we use to identify such measures in this work is **Exploratory Factor Analysis (EFA)**. The idea of this statistical methodology is to use a set of "observed" data to identify whether these observed variables are actually driven by some latent other factors, and to present these "assumed" latent factors as new, mathematically constructed variables. To achieve this, "factor analysis" looks for any evidence of "joint variability" in the observed variables, and tests whether it is likely that such "joint variation" may be because of some additional latent variable(s). An additional benefit of Factor Analysis is that it once the hypothetical factors were identified, it is possible to present them as standardised variables, statistically constructed based on the analysis of joint variance. Unlike ranking indices, such variables are better placed to be used in formula-related statistical modelling.

The first rounds of EFA helped to filter out some of the initially considered variables. The initial EFA performed based on the available vulnerability statistics has revealed that these observed indicators are likely to be driven by four "unobserved" composite factors of vulnerability. The structure matrix of these factors, including their "loadings" (the estimated strength of influence of each factor on each of the observed variables) is shown in Table 2. This initially discovered structure of hidden risk factors helped to simplify the model by excluding some of the less relevant social risks. One such risk turned out to be young motherhood and its potential influence on the educational prospects.

- Out of these four factors, the fourth one deserved immediate attention. The analysis showed that the spatial distribution of the available set of data reflects, among other things, one specific phenomenon: a link between higher incidence of children being born to mothers aged 15-19 and a high drop-out rate from upper secondary education (Factor 4).

- Moreover, there is no significant link between this social feature and any of the other existing data on social vulnerability. In other words, although it is clearly highly unfortunate for young people to leave school before completing their secondary education and although having children in very young age was shown to be related to a range of social risks for the families, there seems to be no immediate, short-term influence of this phenomenon in Kosovo – at least at the level of municipal data – on such indicators as share of households with children headed by single persons, propensity to spending on harmful behaviours, divorce and violence rate.

- This discovery prompted our analysis to remove the factor of young motherhood and related risks to education from further simulations. Its low influence on other risks, which seem more immediately related to the demand for social services in Kosovo, indicated that it would be less appropriate as a criteria to assess the adequacy of distribution of funds for such services. Moreover, exclusion of several variables helped to simplify the model and improve its statistical robustness.

Table 2. Initial Factor Analysis: Four Factors Revealed, including Factor 4 – "Potential risks of young motherhood"

	Factor			
	1	2	3	4
Share of h/h with catastrophic healthcare expenditures	.996			
Share of h/h with catastrophic housing expenditures	.931			
Number of violent deaths in total amount of registered deaths	.742			
Average share of spending on harmful behavious in total h/h budget	.665	.414		
Share of children born out of wedlock		.763		
Share of h/h with children headed by single persons		.715		
Share of h/h headed by a person with education lower than secondary		.710		
Average share of unstable sources in overall H/H budget		.582		
Rate of dropouts from Primary and Lower Secondary Education			.397	
Share of h/h composed of one person aged 65+			.855	
Share of h/h with three or more children			-.772	
Divorce rate			.744	
Share of children born to mothers aged 15-19				.863
Share of dropouts from Upper Secondary Education				.418

Extraction Method: Unweighted Least Squares.
Rotation Method: Promax with Kaiser Normalization.

The second, major round of EFA confirmed the presence of three rather independent social vulnerability factors. The second, simplified round of EFA was conducted based on a smaller amount of variables, confirmed that the three remaining unobserved composite factors of vulnerability were still robust. The results of this analysis are described in Table 3. The three broad factors identified by this calculation are broadly named in this table based on their "composition" in terms of which variables have the strongest link to these hidden patterns:

- Social Vulnerability Factor 1 is linked primarily to the economic pressures born by the households of these municipalities (reflected in the fact that healthcare and housing spending has catastrophic consequences for most budgets), as well as in the high prevalence of violent behaviour and high spending on addictive substances and gambling.
- Social Vulnerability Factor 2 combines a range of phenomena including likelihood of solo-parenting (share of children born out of wedlock and share of households with children headed by single parents), low education, insecure incomes and, again, higher propensity to spend on addictive substances and behaviours.
- Social Vulnerability Factor 3 is strongly linked to age-related risks and the likelihood of living alone in older age, potentially requiring long-term care. This Factor is associated with older communities (respectively, those which have lower share of households with many children). But it is not only about age per se: these are also communities where older people are likelier to end up on their own – these communities have relatively higher share of such households (of people aged 65+ living alone) and relatively higher divorce rates.

Table 3. Main Factor Analysis Results: Three Factors Revealed

	Factor		
	1	2	3
Share of h/h with catastrophic healthcare expenditures	.998		
Share of h/h with catastrophic housign expenditures	.933		
Number of violent deaths in total amount of registered deaths	.729		
Average share of spending on harmful behavious in total h/h budget	.662	.421	
Share of children born out of wedlock		.771	
Share of h/h headed by a person with education lower than secondary		.717	
Share of h/h with children headed by single persons		.666	
Average share of unstable sources in overall H/H budget		.589	
Rate of dropouts from Primary and Lower Secondary Education		.393	
Share of h/h composed of one person aged 65+			.841
Share of h/h with three or more children			-.774
Divorce rate			.754

Extraction Method: Unweighted Least Squares.
Rotation Method: Promax with Kaiser Normalization.

It is notable that the three social vulnerability factors identified by this analysis are rather independent with respect to each other. As illustrated in Table 4, there is no statistically significant correlation between any of them. This means that constructing a single composite measure of social vulnerability for Kosovo municipalities is difficult and probably undesirable. Such conclusion corresponds to the evidence on the diverse nature of social risks across Kosovo which is available from other studies; indeed, the nature of issues facing older or isolated rural communities is likely to be very different from younger and more socially volatile municipalities more exposed to the problems of violence or child maltreatment. These differences influence the demand for social services, and should feature respectively in the structure of the formula.

Table 4. There is no significant correlation between any of the three revealed factors of social vulnerability

		Factor 1	Factor 2	Factor 3
Factor 1	Pearson Correlation	1	.250	-.071
	Sig. (2-tailed)		.199	.719
	N	28	28	28
Factor 2	Pearson Correlation	.250	1	-.161
	Sig. (2-tailed)	.199		.412
	N	28	28	28
Factor 3	Pearson Correlation	-.071	-.161	1
	Sig. (2-tailed)	.719	.412	
	N	28	28	28

It should be also highlighted that the identified composite vulnerability factors do not divide municipalities discretely into three non-overlapping groups. Instead, each factor – or each risk – is likely to be present in each community, but to a different extent. To illustrate this, Figure 3 and Figure 4 show the values of the composite factors by individual municipalities in a form of diamond-diagram. They show how essentially every municipality is vulnerable to all three risks, but to a different degree. They also help to see that the four reference municipalities of the project, included into the sample, represent examples of average vulnerability, but with a different profile. Similar information, for convenience, is presented in a form of scatter diagram in

Figure 5. The scatter diagram also highlights the absence of any correlation between the three composite factors, reinforcing the need to address each of these issues separately in the design of the formula.

Figure 3. The three composite vulnerability factors by municipalities: whole sample

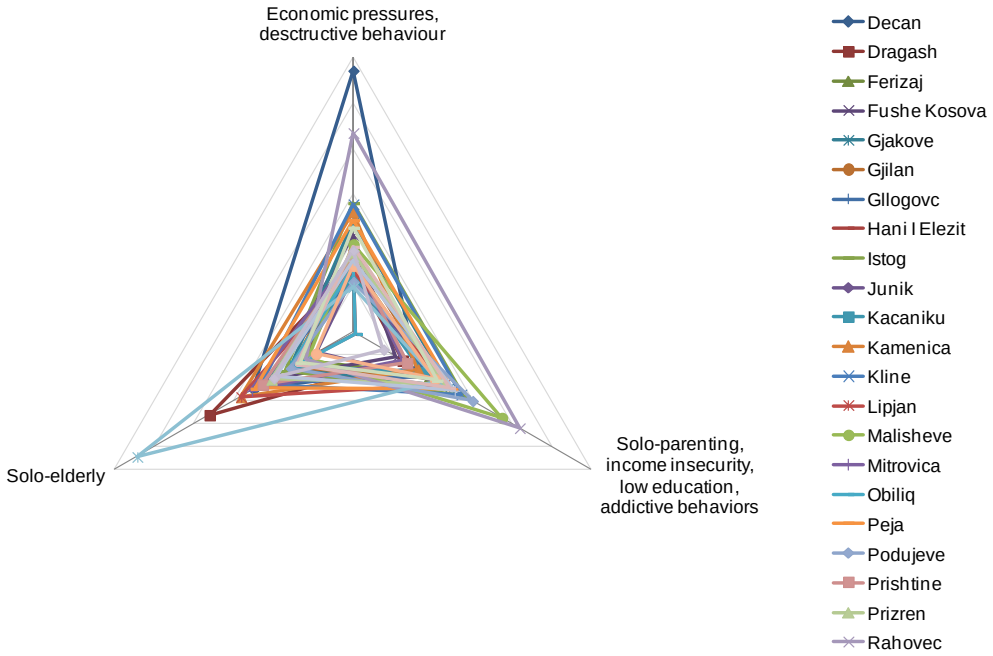


Figure 4. The three composite vulnerability factors by municipalities: four reference municipalities of the project

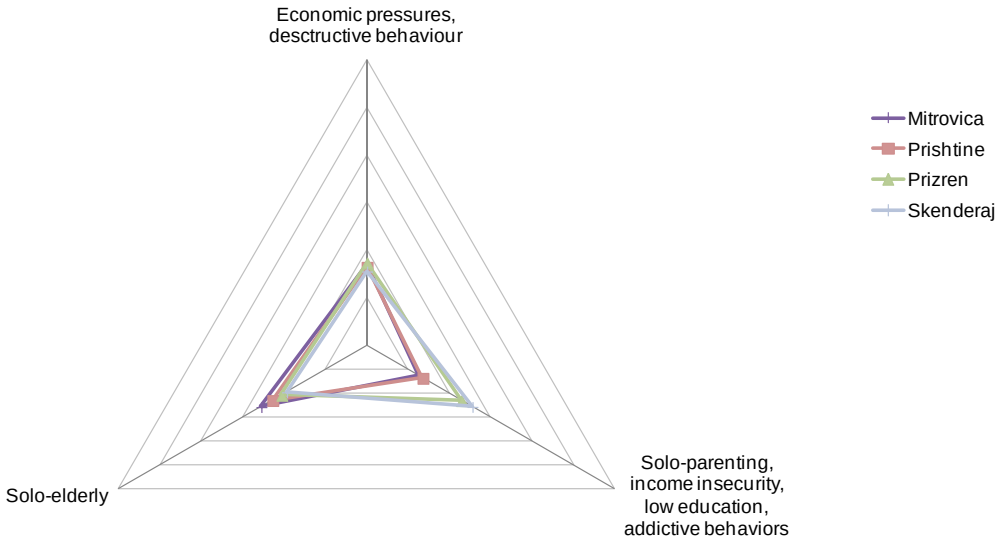
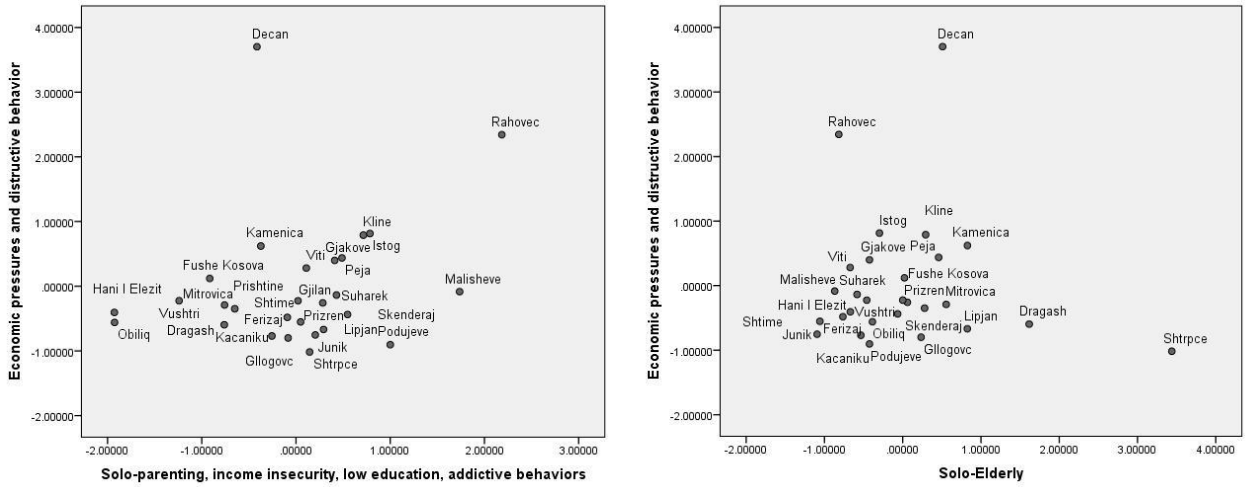


Figure 5. Scatter-plot diagram of the three vulnerability factors across municipalities



Results from Step 2: Identifying policy-neutral variables which would be used in the formula

The second step in designing the formula of our desired specification is to identify policy-neutral variables (indicators) which could be potentially used as criteria in allocation of resources. To remind, these neutral indicators should, ideally, have strongest possible correlation to our revealed indicators of vulnerability, in order to ensure a maximum possible match between the future distribution of resources and the spatial pattern of vulnerability.

Only very few neutral variables appear to have a statistically significant link to social vulnerability factors. To identify such candidate proxy variables among the neutral indicators available in our statistical set, we start with the analysis of the strength and significance of correlation between each pair of neutral and non-neutral variable, measured by Pearson correlation coefficient. We then subject all identified potential predictors to further linear regression analysis to further explore the nature and the power of identified linkages. This analysis shows that, in fact, only very few (six) neutral variables appear to be correlated with the vulnerability indicators. These six neutral variables, whose municipal values have a statistically significant link vulnerability data are summarised in Table 5 and briefly discussed below.

Table 5. Summary of statistically significant correlations between policy-neutral variables and vulnerability factors

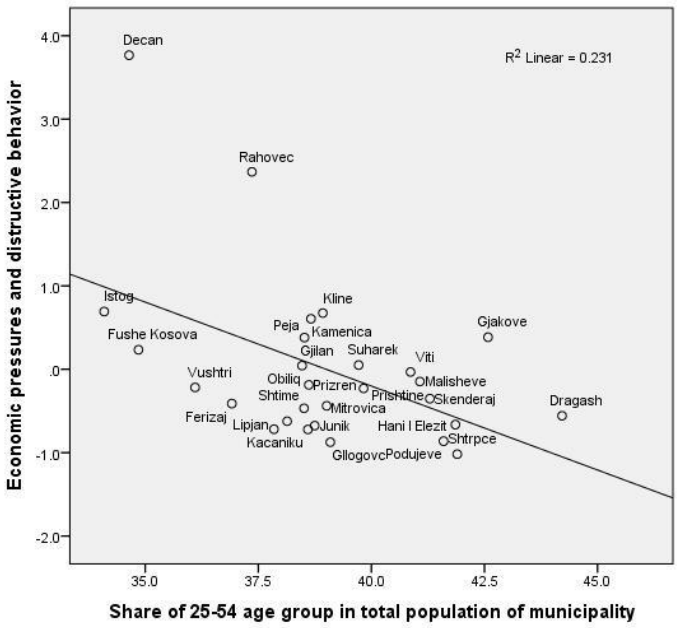
Vulnerability Factor		Share of TotalPopulation age 25-54 [the lower the share, the higher the risk]	Share of FemalePopulation age 0-14 [the lower the share, the higher the risk]	Share of FemalePopulation in Total Population [the higher the share, the higher the risk]	Share of Ethnic Minority Population in Total Population [the higher the share, the higher the risk]	Share of MalePopulation age 55-64 [the lower the share, the higher the risk]	Share of FemalePopulation age 65+ [the lower the share, the higher the risk]
Factor 1	Catastrophic pressures on H/H budgets (Healthcare, Housing); High spending on harmful behaviors; Violence	Pearson Correlation = -.463 (Sig.: .013) Linear Regression: R2=0.231 sig.=.010 B=-.201					
Factor 2	High incidence of H/Hs with children headed by single persons; High incidence of children born out of wedlock; High share of spending on harmful behaviours; High share of unstable sources of income		Pearson Correlation = -.382 (Sig.: .045) Linear Regression: R2=0.161 sig.=.045 B=-0.57	Pearson Correlation = -.387 (Sig.: .042) Linear Regression: R2=0.133 sig.=0.042 B=55.6			
Factor 3	High incidence of 65+ living alone; Low incidence of H/Hs with >3 children; High divorce rate				Pearson Correlation =.835 (Sig.: .000) Linear Regression: R2=0.708 sig.=.000 B=5.97	Pearson Correlation = -.428 (Sig.: .023) Linear Regression: R2=0.215 sig.=.160 B=-0.95	Pearson Correlation = -.424 (Sig.: .024) Linear Regression: R2=0.145 sig.=.290 B=-0.77

- **<u>Correlates for Factor 1: Share of Population Aged 25-54.</u>** The values of Factor 1, which is associated with stronger pressures on the budget from catastrophic expenditures, as well as destructive behaviour, are linked with only one type of neutral data – share of population aged 25-54. This statistical relationship is illustrated in Figure 6. The higher is the proportion of active age population group in the municipality; the lower is the risk of Factor 1 vulnerability.

  This discovery seems to be reasonable and sheds more light on the nature of the social risks associated with Factor 1. Active age population group includes natural breadwinners; underrepresentation of this group is likely to indicate that most active members of the community have left it for a better fortune, and the remaining part of the population is likely to suffer from generally lower incomes (reflected in catastrophic impact of healthcare and housing costs, especially given the higher share of healthcare-consuming children and elderly), as well as from the social ills associated with lower economic opportunities including long-term unemployment (such as consumption of addictive substances and violence).

  Figure 6 and Table 5 also helpfully provide additional information from further regression analysis between this demographic variable and the composite social risk. It shows that the explanatory power of this neutral indicator in predicting the magnitude of Factor 1 risks is only 0.231, but it is significant at the level of 0.01. In other words, underrepresentation of active age population is only one of the many possible indicators of the social risks in the community and it explains only a portion of the potential vulnerability. However, the influence is statistically significant.

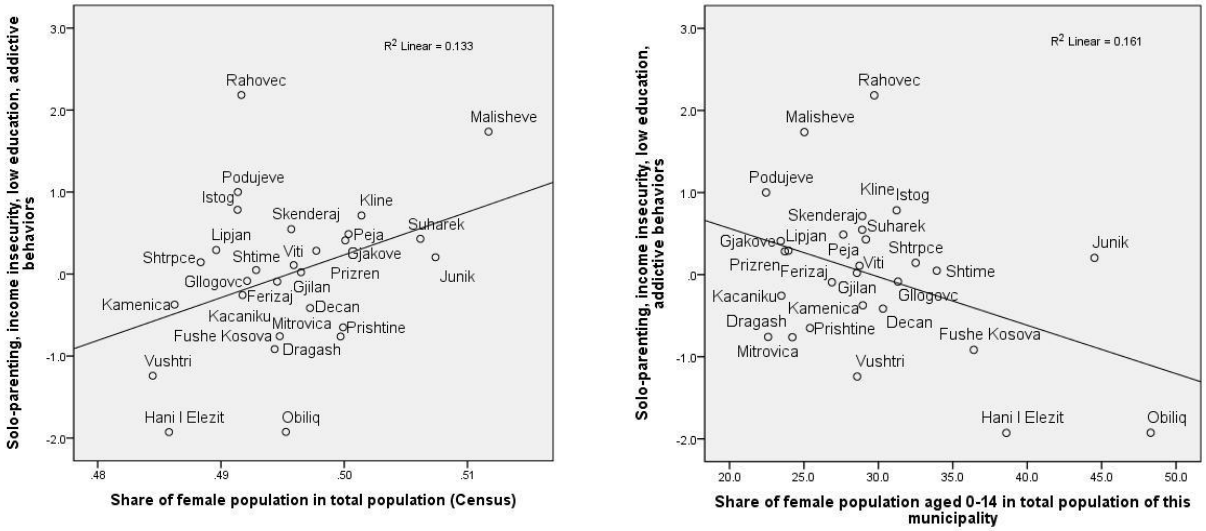
Figure 6. Factor 1 and the share of 25-54 age group in total population



- **<u>Correlates for Factor 2: Share of female population in total population, especially females aged 0-14.</u>** The complex phenomenon covered by Factor 2 of our analysis, which is manifested, among other things, in higher likelihood of single-parent families, income insecurity, low education, and, again, propensity to spend on addictive substances and behaviours, is connected statistically with the relatively higher share of female population (Figure 7).

  Upon reflection, this discovery is less paradoxical than it may sound. Potential reasons for overrepresentation of female population include higher child mortality (affecting) younger groups), out-migration of active male labourers (affecting middle-age groups), higher mortality rates including from cardio-vascular diseases, injuries, and chronic illnesses related to smoking and alcohol use disorders, which is typical for transition economies and likely to have stronger impact on active male population (affecting older population groups). All these possibilities are potentially indicative to adjacent social vulnerabilities affecting such communities.

Figure 7. Factor 2 and the share of female population

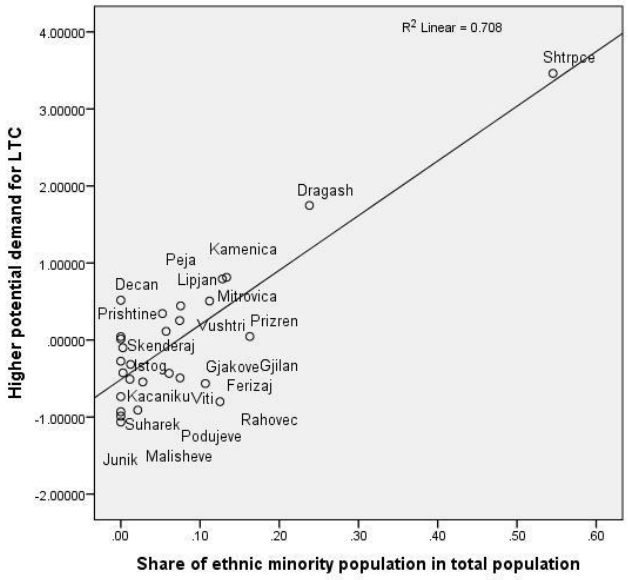


Again, linear regression analysis for these potential predictor variables shows that their predicting power is very small (less than 15%), but statistically significant (see Figure 7 and Table 5).

- **Correlates for Factor 3: Share of ethnic minority combined with specific gender-age imbalance.** The social risk of older people living on their own and potentially requiring long-term care turns out to have the most pronounced profile in terms of the policy-neutral variables which define its probability:

  First of all, Table 5 shows that the likelihood of this risk is significantly higher in communities with bigger shares of ethnic minorities (Figure 8). It is notable that this link is established for non-Serb minorities, given that most municipalities with large Serb minorities had to be excluded from these calculations because of the lacking data. The current methodology for allocation of the General Grant does contain a provision for distribution a share of the grant with account to the proportion of minority population, but this methodology is linked to a list of specified shares of minority population for 11 specific municipalities, most of which have large Serb communities (although there are also some municipalities with mostly Turkish minorities). In other words, the current reference to ethnic minority factor in the General Grant allocation is not sufficiently sensitive to the impact of ethnic minority on the social vulnerability of other municipalities in Kosovo. The finding of this analysis is therefore important in pointing out that this bias deserves a correction: municipalities across the country are equally vulnerable to the problems of lonely elderly, and this phenomenon is more complex than that of isolated Serb minorities.

Figure 8. Factor 3 and the share of ethnic minority population



Secondly, our analysis revealed a statistically significant link between Factor 3 and a certain bias in the gender-age structure of the communities: the risk of older people ending up on their own and potentially requiring LTC is higher when municipalities have lower shares of male population aged 55-64 and female population aged 65+ (Table 5). This link seems to relate to the mortality structure of Kosovo population, which tends to affect male population in their 55-64s, and females at a slightly older age. Municipalities with overall higher mortality risks, to both genders, are respectively more vulnerable to the risk of people ending up in a solo household. Again, although the mechanism of this social phenomenon is more complex, for the formula purposes it is of critical importance to establish the link through a neutral demographic variable such as age-gender balance.

Results from Step 3: Construction of formula options

Construction of the formula options, described in this section, is based on three major provisions:

- **Proposed formula is focused on horizontal equalisation and does not take into account absolute service costs.** As was noted at the outset of this paper, this analysis describes statistical simulations which are focused exclusively on the task of more effective *horizontal* equalisation of social services transfers. In other words, options for approaches to defining the absolute amount of resources which the central government would decide dedicate to social services funding are not elaborated in this study, and this resource envelope is taken as given. Moreover, proposed options for allocating this exogenous resource envelope across municipalities do not take into consideration *absolute* costs of service provision, and are based exclusively on the differences in relative, rather than absolute, demand for services, in comparison to a national average.

- **The formula is constructed with the variables identified in Step 2 except the share of ethnic minorities.** The key finding form the data simulations in Step 2 is that the set of proxy variables which should be included into the formula include age and gender structure of the population, as well as the share of ethnic minority households. However, given that the share of ethnic minority households is already incorporated as a variable into the allocation of the general grant, this dimension is excluded from the formula proposed in this paper.

- **Formula options are constructed separately for social services share of the transfer.** Proposals in this section are formulated for an assumed separate procedure for allocating funds on social service funding: either as a notional grant within the general grant, or a specific grant for social services.

To respond to the above listed specifications, the formula could be based on population numbers weighted by age and gender based on the identified links between specific gender-age groups and social vulnerability. Proposed weighting methodology is described below and weighting coefficients for each segment of the age-gender structure are provided in Table 6. They were defined based on the following considerations:

- Coefficients for the population aged 25-54 have been defined at levels which decrease the weight of this population group in the formula, based on the strength of the statistical link between this variable and the social vulnerability Factor 1 (income pressures and risks of destructive behaviour), estimated through liner regression analysis.
- Coefficients for the female population were defined at levels which increase the weight of this population group in the formula, based on the strength of the statistical link between this variable and the social vulnerability Factor 2 (single-parenting, primary and lower secondary school dropouts, insecure incomes, low education and addictive behaviour), estimated through liner regression analysis.
- Coefficients for male population aged 55-64 and female population aged 65+ were defined at levels which decrease the weight of these population groups in the formula, based on the strength of the statistical link between these variables and the social vulnerability Factor 3 (risks of need for long-term care by single elderly), estimated through liner regression analysis.
- Coefficients for all other gender-age groups were defined so that the average of weighting coefficients for all groups is equal to unity.

Table 6. Proposed weighting coefficients for gender-age structure

Age	Male	Female
0-14	1.06	1.20
15-24	1.06	1.20
25-54	0.72	0.85
55-64	0.74	1.20
65+	1.06	0.91

Results from Step 4: Simulation of potential fiscal impact by individual budgets

This section describes statistical simulations of some of the proposed changes in the formula and the direction of their impact on municipal budgets. Given the preliminary nature of proposed coefficients and the weak quality of available data, these simulations are limited to those municipalities for which the whole set of data was available.

Simulations were conducted for two alternative scenarios:

- **Alternative formula for allocation of the share of the General Grant assigned for social services, <u>including wages</u>.** First, an alternative formula was applied to the amounts of the General Grant notionally allocated to social services in the 2012 municipal budgets, including spending on wages. Expected redistribution of resources was calculated in terms of its impact on the amounts of the social services share of the General Grant, as well as on the overall distribution of the General Grant.

- **Alternative formula for allocation of the share of the General Grant assigned for social services, <u>net of wages</u>.** Secondly, the same alternative version of the formula was applied to the amounts of the General Grant notionally allocated ot social services in the 2012 municipal budgets but excluding the costs of wages. Again, with this approach, impact was calculated in terms of the changed allocations of this dedicated share of the General Grant and overall amounts of the General Grant.

The results of the simulations are described in Table 7, Figure 9, Figure 10, and Figure 11 below. They reveal a number of issues which need to be taken into account if the reform is implemented:

- **Re-allocating social services transfer net of wages would create less losers and more winners, but it would leave the bulk of the budget distributed without due transparency.** In simulations which are based on 2012 allocations, applying formula exclusively to the non-wage component of the current social services transfer would have a much smaller redistributive impact on the municipalities, with only six municipalities losing, and the rest having larger allocations. This is primarily because the distribution of these non-wage portion of social services in the 2012 budgets is much more uneven that the distribution of the wage component, with several municipalities receiving relatively larger share of resources in comparison to others. In particular, the 2012 budget data seems to imply a very significant increase to the social services budget of Prizren municipality. Redistributing these resources based on a transparent formula would lead to more equal distribution with most budgets being relatively better off. At the same time, in the 2012 budget, wages represent 66% of overall allocations to social services, and leaving their distribution to non-formula approach would imply continued lack of sufficient transparency.

- **Applying formula would lead to significant changes in social services budgets, regardless of whether it is applied exclusive or inclusive of wages.** Regardless of whether formula is applied to social services transfer inclusive or exclusive of wages, the magnitude of potential impact by individual municipalities in terms of the budgets allocated to social services may be significant. In case of reallocation inclusive of wages, maximum increase in allocations would be 86% (Podujeve), and maximum decrease would be 40% (Prizren). In case of reallocation net of wages, the impact would be much stronger: allocation of the biggest winner (Obiliq) would be increased by 3.6 times (260%) while the allocation to Prizren (net of wages) would be decreased by 72%.

- **Given that allocation patters for wage-component and non-wage component of the social services transfer currently differ significantly, application of formula to these respective portions of the transfer would lead to a different set of winners and losers.** The most extreme example is Obiliq: in the 2012 budget data, this municipality has relatively

higher allocation of wage-related transfer but very small estimated non-wage costs. Respectively, a new formula would lead to an increase of allocation to this municipality if applied to non-wage transfer, and to a significant decrease in allocation if wages are included.

- **The impact on overall allocations of General Grant would be small in any scenario.** Regardless of which share of the social services budget is exposed to formula-based redistribution, the impact on the allocation of the overall amount of the General Grant across municipalities will be relatively small (Figure 11). In the case of re-allocation inclusive of wages, maximum overall increase in the General Grant would be for Ferizaj (1.3%) and maximum decrease – for Prizren (-1.6%). In case of re-allocation net of wages, maximum increase in the General Grant would be 0.6% for each of the three municipalities: Ferizaj, Mamush, and Viti, and the maximum decrease would be -2.1% for Prizren.

- **Volatility in social service allocations to individual budgets has been significant in the last year even without the formula.** Although the expected impact of applying the formula by individual budgets may be significant, it is worth noting that, unfortunately, this volatility would not be a new phenomenon for Kosovo municipalities. Based on the available data, even in the absence of the formula, the magnitude of changes in the individual social services budgets across municipalities between 2012 and 2011 were rather dramatic (see the last column in the Table 7). But while the stress of changed allocation after the formula may be smoothened with a system of transition coefficients (described in the next section), it represents a more transparent and fair alternative to the current approach.

Table 7. Simulation of changes in the grant distribution across municiaplities

	Actual grant allocations in 2011-2012				**Simulation Scenario 1 (incl.wages)**				**Simulation Scenario 2 (net of wages)**				**% Change between actual allocations in 2012-2011**
					Simulated allocations		Impact		Simulated allocations		Impact		
	2011 Social Services Grant	2012 General Grant	2012 Total for Social Services	2012 Social Services net of Wages	On social services	Total amount of General Grant	**Change in allocation on social services**	**Change in total amount of General Grant**	On social services	Total amount of General Grant	**Change in allocation on social services**	**Change in total amount of General Grant**	
Decan	27,036	2,150,057	53,807	11,000	57,655	2,153,905	**7.2%**	**0.2%**	19,756	2,158,813	**79.6%**	**0.4%**	99.0%
Dragash	26,499	2,367,178	52,700	11,000	48,060	2,362,538	**-8.8%**	**-0.2%**	16,469	2,372,647	**49.7%**	**0.2%**	98.9%
Ferizaj	39,613	5,439,564	85,883	24,150	159,021	5,512,702	**85.2%**	**1.3%**	54,491	5,469,905	**125.6%**	**0.6%**	116.8%
F/Kosova	26,778	1,814,678	60,142	20,000	51,187	1,805,723	**-14.9%**	**-0.5%**	17,540	1,812,218	**-12.3%**	**-0.1%**	124.6%
Gjakove	42,310	5,851,178	109,500	29,000	135,360	5,877,038	**23.6%**	**0.4%**	46,383	5,868,561	**59.9%**	**0.3%**	158.8%
Gjilan	42,595	5,011,938	89,800	82,000	130,994	5,053,132	**45.9%**	**0.8%**	44,887	4,974,825	**-45.3%**	**-0.7%**	110.8%
Gllogovc	34,278	3,007,470	112,091	46,380	85,375	2,980,754	**-23.8%**	**-0.9%**	29,255	2,990,345	**-36.9%**	**-0.6%**	227.0%
Hani I Elezit	6,981	641,402	15,170	2,000	13,543	639,775	**-10.7%**	**-0.3%**	4,641	644,043	**132.0%**	**0.4%**	117.3%
Istog	31,416	2,481,038	62,440	7,000	58,322	2,476,920	**-6.6%**	**-0.2%**	19,985	2,494,023	**185.5%**	**0.5%**	98.8%
Junik	6,981	617,740	13,119	4,750	8,847	613,468	**-32.6%**	**-0.7%**	3,031	616,021	**-36.2%**	**-0.3%**	87.9%
Kacaniku	23,098	1,754,812	39,186	8,000	48,508	1,764,134	**23.8%**	**0.5%**	16,622	1,763,434	**107.8%**	**0.5%**	69.7%
Kamenica	46,488	2,772,455	76,000	13,000	51,728	2,748,183	**-31.9%**	**-0.9%**	17,725	2,777,180	**36.3%**	**0.2%**	63.5%
Kline	26,776	2,365,754	54,884	13,554	54,880	2,365,750	**0.0%**	**0.0%**	18,806	2,371,006	**38.7%**	**0.2%**	105.0%
Lipjan	32,163	3,602,726	66,040	13,000	83,946	3,620,632	**27.1%**	**0.5%**	28,765	3,618,491	**121.3%**	**0.4%**	105.3%
Malisheve	27,624	2,668,381	65,308	18,860	76,839	2,679,912	**17.7%**	**0.4%**	26,330	2,675,851	**39.6%**	**0.3%**	136.4%
Mamush	6,981	535,757	8,954	0	9,406	536,209	**5.1%**	**0.1%**	3,223	538,980	**n/a**	**0.6%**	28.3%
Mitrovica	72,523	4,388,511	152,000	13,000	104,093	4,340,604	**-31.5%**	**-1.1%**	35,669	4,411,180	**174.4%**	**0.5%**	109.6%
Obiliq	28,193	1,472,973	49,000	3,000	31,544	1,455,517	**-35.6%**	**-1.2%**	10,809	1,480,782	**260.3%**	**0.5%**	73.8%
Peja	39,051	6,058,217	124,000	34,000	140,053	6,074,270	**12.9%**	**0.3%**	47,991	6,072,208	**41.2%**	**0.2%**	217.5%
Podujeve	32,861	5,813,557	67,504	13,000	125,612	5,871,665	**86.1%**	**1.0%**	43,043	5,843,600	**231.1%**	**0.5%**	105.4%
Prishtine	103,819	18,297,072	263,000	60,000	285,432	18,319,504	**8.5%**	**0.1%**	97,808	18,334,880	**63.0%**	**0.2%**	153.3%
Prizren	52,520	11,135,550	435,100	319,000	260,061	10,960,511	**-40.2%**	**-1.6%**	89,114	10,905,664	**-72.1%**	**-2.1%**	728.4%
Rahovec	35,562	3,201,286	83,434	23,800	80,313	3,198,165	**-3.7%**	**-0.1%**	27,521	3,205,007	**15.6%**	**0.1%**	134.6%
Shtime	25,075	1,498,066	54,000	14,000	39,553	1,483,619	**-26.8%**	**-1.0%**	13,554	1,497,620	**-3.2%**	**0.0%**	115.4%
Skenderaj	40,337	2,901,062	81,854	13,000	74,180	2,893,388	**-9.4%**	**-0.3%**	25,419	2,913,481	**95.5%**	**0.4%**	102.9%
Suharek	31,452	3,972,822	71,000	16,000	86,299	3,988,121	**21.5%**	**0.4%**	29,572	3,986,394	**84.8%**	**0.3%**	125.7%
Viti	27,342	2,404,713	51,087	8,856	68,023	2,421,649	**33.2%**	**0.7%**	23,309	2,419,166	**163.2%**	**0.6%**	86.8%
Vushtri	29,894	3,801,910	74,343	25,495	102,510	3,830,077	**37.9%**	**0.7%**	35,126	3,811,541	**37.8%**	**0.3%**	148.7%
Total	**966,246**	**108,027,867**	**2,471,346**	**846,845**	**2,471,346**	108,027,867	**0.0%**	**0.0%**	**846,845**	108,027,867	**0.0%**	**0.0%**	155.8%

Figure 9. Simulation of financial impact across municipalities: re-distribution of allocations on social services including wages

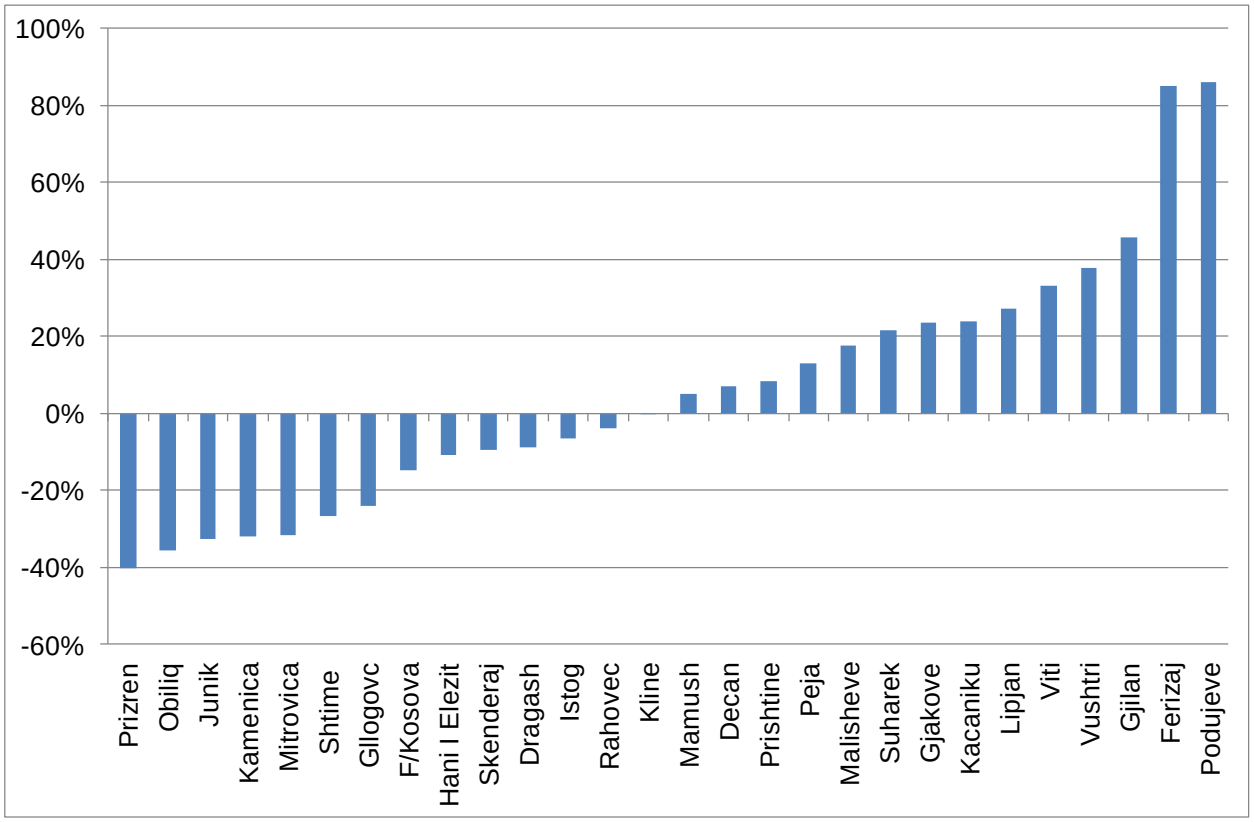


Figure 10. Simulation of financial impact across municipalities: re-distribution of allocations on social services net of wages

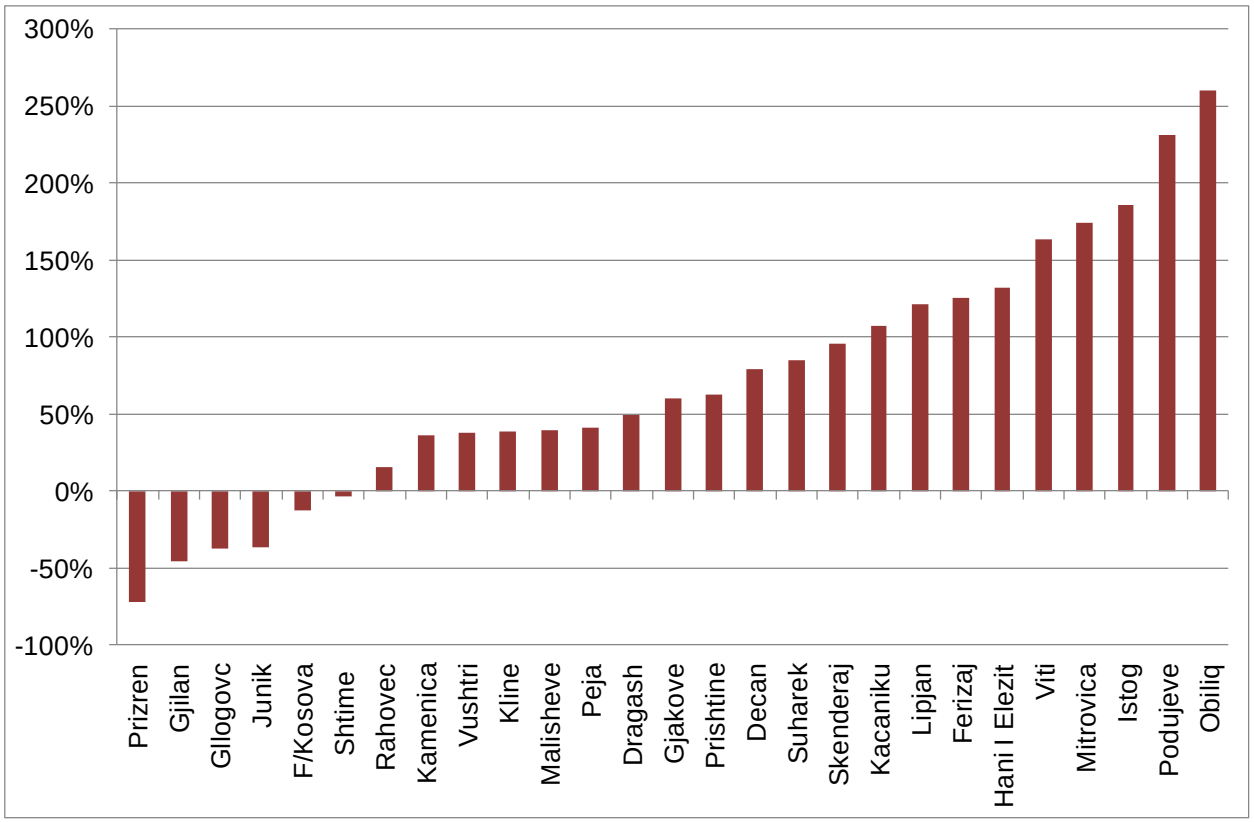
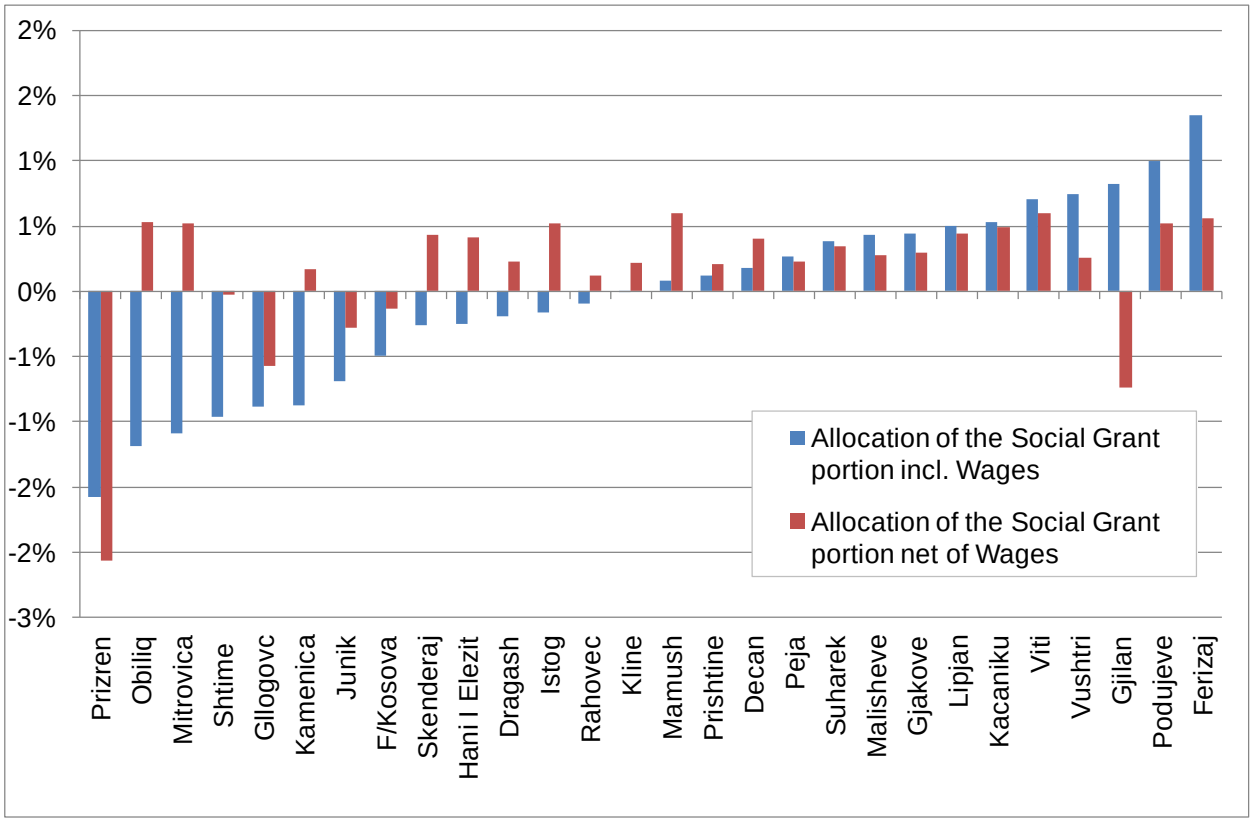


Figure 11. Simulation of financial impact across municipalities: re-distribution of overall amounts of General Grant



Results from Step 5: Designing a transition arrangement

Given the substantial expected magnitude of financial impact on the social services allocations at the municipal level after the application of formula, it could be reasonable to combine the reform with the introduction of a transition arrangement, which would help to cushion the stress. Proposed mechanism for such transition is described below and illustrated in Table 8:

- Transition period can be defined for a chosen amount of years (e.g. 2 years, as chosen in our example below).
- Based on the chosen transition period, the Government would define "graduation coefficients" for each of the transition years (e.g. such coefficient would equal 1 in the first year of transition, 0.5 in the second year, and 0 in the last year).
- For each municipality, the Government would identify an individual transition coefficient, based on the degree of change which would be expected in each individual case. These transition coefficients would be then fixed for the whole transition period.
- Every year, the allocations would be adjusted for each municipality based on its transition coefficient and graduation coefficient for this year.

Table 8. Proposed transition coefficients to cushion the fiscal stress from reform

	2012 Share of General Grant allocated to Social Services (no formula)	2012 Share of General Grant allocated based on proposed formula	Difference, %	Required degree of change	2012	2013	2014
	A	B	= (B-A)/B %	= B/A	Gradual change of the allocations from calculated without formula (graduation coefficient = 1) to calculated by formula (graduation coefficient = 0)		
Graduation coefficient					1.00	0.50	0
Decan	53,807	57,655	7.15%	0.93	53,807	55,731	57,655
Dragash	52,700	48,060	-8.80%	1.10	52,700	50,380	48,060
Ferizaj	85,883	159,021	85.16%	0.54	85,883	122,452	159,021
Fushe Kosova	60,142	51,187	-14.89%	1.17	60,142	55,665	51,187
Gjakove	109,500	135,360	23.62%	0.81	109,500	122,430	135,360
Gjilan	89,800	130,994	45.87%	0.69	89,800	110,397	130,994
Gllogovc	112,091	85,375	-23.83%	1.31	112,091	98,733	85,375
Hani I Elezit	15,170	13,543	-10.73%	1.12	15,170	14,356	13,543
Istog	62,440	58,322	-6.60%	1.07	62,440	60,381	58,322
Junik	13,119	8,847	-32.57%	1.48	13,119	10,983	8,847
Kacaniku	39,186	48,508	23.79%	0.81	39,186	43,847	48,508
Kamenica	76,000	51,728	-31.94%	1.47	76,000	63,864	51,728
Kline	54,884	54,880	-0.01%	1.00	54,884	54,882	54,880
Lipjan	66,040	83,946	27.11%	0.79	66,040	74,993	83,946
Malisheve	65,308	76,839	17.66%	0.85	65,308	71,074	76,839
Mamush	8,954	9,406	5.05%	0.95	8,954	9,180	9,406
Mitrovica	152,000	104,093	-31.52%	1.46	152,000	128,047	104,093
Obiliq	49,000	31,544	-35.62%	1.55	49,000	40,272	31,544
Peja	124,000	140,053	12.95%	0.89	124,000	132,026	140,053
Podujeve	67,504	125,612	86.08%	0.54	67,504	96,558	125,612
Prishtine	263,000	285,432	8.53%	0.92	263,000	274,216	285,432
Prizren	435,100	260,061	-40.23%	1.67	435,100	347,580	260,061
Rahovec	83,434	80,313	-3.74%	1.04	83,434	81,874	80,313
Shtime	54,000	39,553	-26.75%	1.37	54,000	46,777	39,553
Skenderaj	81,854	74,180	-9.37%	1.10	81,854	78,017	74,180
Suharek	71,000	86,299	21.55%	0.82	71,000	78,649	86,299
Viti	51,087	68,023	33.15%	0.75	51,087	59,555	68,023
Vushtri	74,343	102,510	37.89%	0.73	74,343	88,426	102,510
Total	2,471,346	2,471,346	0.00%	1.00	2,471,346	2,471,346	2,471,346

Conclusions and recommendations

Statistical modelling undertaken by the KSSD project in support of development of a new social services formula for Kosovo helped to formulate several observations and recommendations, described below.

- Allocation of resources on decentralised provision of social services in Kosovo could be made much closer to the spatial pattern of social risk distribution with the help of a transparent formula based on policy-neutral variables related to gender-age structure of the population.
- Applying such formula to a limited amount of the current social services transfer (net of wages) would produce more winners than losers. However, such decision would imply that only 34% of the overall social services budget – which is represented by the non-wage spending – would be allocated based on the formula developed to ensure closest link to social vulnerability patterns. The rest of the social services budget would be allocated either through the regular General Grant methodology or based on historical patterns, none of which takes sufficient account of the geographical distribution of social risks across municipalities.
- Fiscal impact on individual social services budgets after applying the formula would be significant, but it could be cushioned with the help of transition coefficients which would signal commitment to reform and yet insure against fiscal stress at the local level.
- Even without the formula, social services allocations at the municipal level have been volatile and not firmly predictable, given lack of transparency in the allocation criteria. Introduction of a transparent formula would change that trend.
- Statistical modelling performed for designing the formula so far has been significantly limited with the available data. Much additional effort is needed to expand existing databases, collect further data on social vulnerability, and ensure compatibility between data sets, in order to equip evidence-based policy making in the social services area.