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Assessment of socio-economic resilience of Lithuanian municipalities

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Abstract. In the face of growing ecological, social, and economic crises, it is becoming increasingly important for countries and regions to consider future economic growth or prosperity and assess the potential damage of shocks and strengthen resilience. Most studies examine macroeconomic traits of resilience; hence, resilience manifests itself at the local level and depends on the local community's socio-economic resources and capacities to overcome the challenge. The concept of resilience has been shaped in the discourse of environmental crises, and there is a lack of models and empirical examples examining socio-economic community resilience. The article discusses the concept of community resilience. It presents the results of applying the BRIC (Baseline resilience indicator for communities) method to the socio-economic resilience of Lithuanian municipalities.

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1. INTRODUCTION

Most resilience studies examine macroeconomic traits of resilience, although resilience manifests itself at the local level and depends on the socio-economic resources and abilities of the local community (Norris et al., 2008; Rose, Krausmann, 2013; Cimellaro et al., 2016; Terzo, 2021; Soufi, Esfahanipour, Shirazi, 2022; Yuheng et al., 2022; Xiao, 2023; Kim, Kim, 2025; Iwara et al., 2025; Huszár et al., 2025).

Using available resources, skills, and know-how, local inhabitants directly affected by the shock create networks of protection and mutual assistance, which ultimately determines the level of community resilience (Scherzer et al., 2019; Anguelov, Angelova, 2025; Bekbossinova et al., 2025; Samašonok, 2025).

The European Commission's scientific report "Time for Transformative Resilience: The COVID-19 Emergency" (Giovannini et al., 2020) highlights the urgent need for models and methods to assess and strengthen communities' resilience and deal with effectively with social, economic, or ecological crises at a local level (Ungar, 2018; Giovannini et al., 2020; Kovács et al., 2020; Okunevičiūtė Neverauskienė et al., 2024; Chytilová et al., 2024; Liou et al., 2025).

There is a lack of clarity on how socio-economic resilience can be theoretically substantiated and empirically assessed, what set of indicators allows to measure the community resilience (Giovannini et al., 2020; Pietro, Lecca, Salotti, 2021; Kireyeva et al., 2023; Imperiale, Vanclay, 2024). There is a lack of conceptually sound methodological studies exploring community resilience in a broader interdisciplinary context (Darnhofer et al.; 2010 Cabell, Oelofse, 2012; Ivančík, Nečas, Iľaščíková, 2024; Ivančík, Andrassy, 2024; Ivančík, Nečas, 2025.).

The lack of solid methodological consensus limits the practical applicability of resilience research; the mixed and not precise results complicate the formal reactions of governments and private actors (Montrimas et al., 2024; Wojciechowski et al., 2025). There is very little continuous complex research in Lithuania, covering various aspects of the municipality, based on which the local government could form investments, interventions, and strategic development plans (cf. Frąszczak, 2023). The need for clear answers and specific ways to manage shocks and to prevent socio-economic damage is more than urgent nowadays.

In this study, BRIC (Baseline Resilience Indicators for Communities) methodology (Cutter et al., 2014) was adapted for the first time to assess the resilience of Lithuanian municipalities. Following BRIC methodology, a structured system of socio-economic resilience assessment of Lithuanian municipalities was created – the hierarchical index covering six domains: economic resilience, social resilience, infrastructural resilience, institutional resilience, community resilience, and environmental resilience.

The research raises the issue of community resilience in economic development. It contributes to the strengthening of local economies by helping to ensure efficient and equitable distribution of resources to reduce vulnerability to recession. Research brings a new approach to the crisis, showing that crisis can be an impetus to improve the outdated or malfunctioning systems, introduce structural changes, reorient and ensure even more successful economic growth in the future.

2. LITERATURE REVIEW

The origin of the resilience concept starts with Holling's works (Holling, 1973). The scientist introduced the concept of resilience in ecology by examining natural change in complex systems. According to Holling, resilience is a capacity of a system to absorb shock and disturbances and maintain unchanged relationships between systems and inhabitants (Holling, 1973). Holling defines resilience as the system's survival resource, the "buffer" protecting against the adverse effects of the environment. The contemporary scientific literature mainly elaborates two leading perspectives of the concept of community resilience: engineering and socio-ecological (Pendall et al., 2010; Bristow & Healy, 2020; Scherzer, 2019, Khalid, 2025). The direction of engineering resilience emphasizes the efficiency, predictability, and stability of systems in the face of crises. In this perspective, all systems seek equilibrium and balance (Folke, 2016, Trippl; Fastenrath & Isaksen, 2024; Capoani, Fantinelli & Giordano, 2025; Mohammed et al., 2025).

Research in this direction examines the ability of systems to return to regular activities quickly and efficiently after a shock. The faster the system can return to its equilibrium, the more resilient it is. In the field of engineering resilience, researchers value infrastructure, technology, and their interactions with humans (Folke, 2016; Bristow & Healy, 2020; Okunevičiūtė Neverauskienė & Klepone, 2024; Šimančová, Soviar, 2024; Razavi & Sierpinski, 2024; Szcześniak & Gorzelańczyk, 2024). The perspective of socio-ecological resilience examines sustainability, change, and unpredictability in a dynamic environment. Socio-ecological resilience represents the ability of people and systems to leverage available resources and competencies to implement the necessary changes in the face of a crisis (Paton & Johnston, 2017; Adgar, 2005; Hamsal, Ichsan, Wicaksono, 2023; Gqalindaba, Lukman, Makiwane, 2024; Özekenci, 2025).

The term community resilience, which often appears in cross-disciplinary research studies, reflects a holistic picture that seeks to examine the interactions between the economy and other systems in overcoming a slowdown or downturn caused by a shock. Community resilience is the ability of a community operating in a defined geographical area to overcome crises and adapt to the changes for socio-economic well-being. Resilience is an integral meta-characteristic of a community, describing the quality of different systems and their interactions.

The theory of community resilience was proposed by Norris et al. (2008), later widely applied by economics and other disciplines (Cutter et al., 2010; Czeczeli et al., 2020; Cagle, 2019, Walker, 2020). Norris et al. (2008) defined community resilience as a collective process that combines the resources available to local people with the ability to adapt and grow in the face of a shock. Therefore, resilience is an outcome and a process that links resources to the result. In the field of research, community resilience is usually explained using a model (Cutter et al., 2010), an instrument (Cutter et al., 2008; Renschler et al., 2010; Masterson et al., 2014), or an index (Cutter et al., 2014; Alsheri et al., 2015; Shaw & Maythorne, 2013).

3. RESEARCH METHODOLOGY

The chosen BRIC methodology allows assessing the socio-economic resilience of Lithuanian municipalities. Cutter, with colleagues (Cutter et al., 2014) applied BRIC to compare the resilience of US states. Scherzer and colleagues later applied this method to the resilience analysis of Norwegian municipalities in 2019, and Sinh-Peterson (2014) used it to examine Australian regions. The BRIC is a comprehensive hierarchical index composed of indicators grouped into six domains of resilience: social, economic, institutional, infrastructural, community, and environmental. The BRIC methodology examines the inherent conditions of community resilience created by the interaction of social systems, infrastructure, and nature, also known as ecosystem services (Bruckmeier, 2016). Lithuania has fewer ecological disasters, so a model that does not reflect the system's resilience in specific crises but the general resilience equivalent to the immunity of a living system is more relevant. Cutter and colleagues, who developed the BRIC index,

note that it is a static picture of resilience. At the same time, researchers acknowledge that the resilience characteristics of communities are dynamic and may vary over time. This methodology examines existing signs of community resilience but not their application in the face of a crisis. The BRIC approach implies that a calculated index may indicate whether the community shows weak or robust capacities to adapt and change in the front of shock. The BRIC index doesn't measure the resilience of communities as a process or the outcome. The authors of the method emphasize that the BRIC is adapted to geographically linked communities, as this level is critical in crises. In the BRIC methodology, inherent resilience conditions describe community-specific resilience without focusing on specific crises. The model assumes that the community's resources and capacities can mitigate the crisis's adverse effects. A resilient community uses available resources, social, economic, and natural capital to adapt to changing circumstances and reduce or avoid the adverse effects of the crisis (Magis, 2010). It is important to note that the index created for Lithuania is not a direct copy of the BRIC methodology applied in the USA. Cutter et al. (2014) proposed that a list of indicators was considered a guideline. The adaptation of the method considered the available indicators and Lithuania's regional structure. Other researchers made similar adaptations of BRIC model to their countries: Scherzer and colleagues (2019) applied the model to Norway, and Singh-Peterson et al. (2014) - For Australia. The hierarchical index construction principle and logic are completely taken over from the BRIC model. According to the BRIC methodology, the socio-economic resilience index is formed in several stages: 1) data collection is formed, 2) sub-indices are calculated, 3) an aggregated hierarchical index is calculated. The formation of the data setup starts with the calculation of the standard deviations of the variables. To estimate the deviation of the observations from the mean value, the mean values of the variables are initially formed using Formula 1. In this formula, n denotes all observations according to the number of specific variables - $\bar{y}$, where the particular variable is

$$y_i.\bar{y} = \frac{1}{n}(\sum_{i=1}^{n} y_i) \quad (1)$$

The standard deviations of the variables are calculated according to formula 2. In this formula, due to the mean decay properties, the distances between observations are squared, s denoting the variance of the sample.

$$s = \sqrt{\frac{1}{n-1}\sum_{i=1}^{n}(y_i - \underline{y})^2} \quad (2)$$

The next step is to normalize the observed values according to the min-max formula 3. This formula transforms all values of differently expressed variables (including sub-index values) into dimensionless values on a scale from 0 to 1. During normalization, the observed value is assigned to 1 and the lowest to 0; the negative indicators are inverted, i.e., the highest value is assigned to 0 and the lowest to 1.

$$y' = \frac{\underline{y} - y_{min}}{ymin_{max,}} \quad (3)$$

After the normalization of the indicators, the solution of the problem of multicollinearity is performed. The convergence validity of the data system is determined by applying the Pearson correlation coefficients according to formula 4. The Pearson coefficient is calculated by assessing the relationships between all variables and determining whether the interdependencies of the variables are too high, as all indices need to be independent. In solving the problem of multicollinearity, we avoid a situation where several independent variables explain the same information, or a change in one of the related indicators significantly changes the

whole system. The Pearson correlation coefficient, which analyzes the strength of a linear relationship, is a dimensionless quantity r_{XZ}. The value of which can be from -1 to +1. When the Pearson coefficient r> 0.7 indicates a high correlation between the observations and some of the variables must be eliminated due to the multicollinearity problem. The Pearson correlation coefficient is calculated using formula 4, where S_X and S_X are simple standard deviations and S_{XZ} is the covariance of the sample.

$$r_{XZ} = \frac{S_{XZ}}{S_X S_Z} \tag{4}$$

The sample covariance S_{XZ} is calculated using formula 5, where x_i and $z_i$are the observed values, $E(X)$ and $E(Z)$ are the averages of two independent random variables.

$$S_{XZ} = \frac{1}{n}\sum_{i=1}^{n}[x_i - E(X)]\ \ [z_i - E(Z)] \tag{5}$$

The BRIC resilience index is hierarchical, in which observations are assigned to thematic domains, sub-indices that later form the final index. The BRIC index, further developed on the basis of an aggregation method that uses the principle of equal-weighted average at both the sub-index level and the composite level, has been chosen because, in particular, this simple aggregation method is transparent and easy to understand. (Downey, D. C. (2015). The normalized kinetic values according to formula 6 are calculated by forming six sub-indices. In this sub-index formula, yi 'is the normalized result obtained by applying the min-max method, n is the number of all observations belonging to the sub-index in a given municipality.

$$SUB_{INDEX} = \frac{1}{n}\sum_{i=1}^{n} y_i^{'} \tag{6}$$

The final aggregated result of the resistance index is the sum of the normalized values of all sub-indices in a given municipality (Scherzer et al., 2019), according to formula 7.

$$BRIC = SocR + EconR + InstR + ComC + InfR + Env \tag{7}$$

Cutter et al. (2010), Scherzer et al. (2019) notes that the formation of the BRIC resistance index involves two steps: first calculating the sub-indices results and then normalizing them aggregating the final index, it enhances practical applicability. The BRIC baseline indicators for the sub-index counter-methodology show how interventions in socio-economic ecosystem services can significantly improve the index's overall performance. (Estly et al., 2005; Cutter et al., 2010). The main weakness of the BRIC model is that the index relies on national data sources, which are often outdated or insufficient to describe the local community picture in detail, and the index does not reflect dynamics but provides an assessment of the current state (Scherzer et al. 2019; Cutter et al. 2010).

4. INDICATOR SELECTION AND DATA PROCESSING

The first step in the data system development process was a detailed analysis of other models. After analyzing 15 community resilience research methods, a list of 68 desired indicators was compiled, from which 60 indicators were selected, the data of which are available in Lithuania. Analyzing all available indicators checked whether the data from the primary sources were collected using the same methodology and whether they could be compared. Data from secondary sources were checked to ensure that all

municipalities were represented and that the data were representative. Eight indicators were removed from this list due to a lack of data collection clarity. A final set of 50 indicators has been developed and passed through the normalization process. After performing a correlation analysis and determining which indicators had a correlation value greater than 0.7 (Pearson r> 0.7). 16 indicators were removed, ensuring that all features that make up the index system were independent. Table 1 shows the hierarchical system of the 35 indicators that make up the aggregated resilience index.

Table 1

The set of indicators for resilience sub-indices and index

Community resilience index	Economic resilience subindex	The share of women in the employed population Value-added at production costs Useful area per person Average annual gross earnings The pay ratio of women and men Long - term unemployment rate
	Social resilience subindex	The employment rate of people of working age Demographic old-age ratio Net migration Dependency ratio Avoidable mortality rate Population change rate
	Infrastructural resilience subindex	Accessibility of public transport Accessibility to railway stations Accessibility to the nearest Lithuanian airport Number of accommodation establishments Number of hospital beds
	Institutional resilience subindex	Number of museums Number of general education schools NPOs (non-profit organizations) Voter turnout
	Environmental resilience subindex	Recycled/recovered municipal waste The ratio of natural and semi-natural areas Share of water bodies with good quality Use of public transport Number of farmers' holdings
	Community resilience subindex	Alcohol-related deaths Number of visitors per cultural center The proportion of rural residents Share of community service providers (education, science, health, social services, culture) among all activity units Out-of-school children The standardized mortality rate due to suicide Number of car accidents The charity provided per legal entity Share of domestic violence among all crimes

Source: Compiled by authors

Indicators for all six sub-indices have solid theoretical justification. The economic resilience sub-index is designed to reflect the viability and sustainability of the local economy. In the scientific literature, economic resilience is commonly described in terms of three aspects: the level of financial resources, income equity, and business viability (Ekins, Medhurst, 2006; Dormady, Rose, Roa-Henriquez, Morin, 2022; Sensier, Rafferty, Devine, 2023; Dzigbede, Pathak, Muzata, 2023; Stamatev, Angelova, 2024). The economic resilience of a community depends on the community's economic structure and its relationship to resilience.

Social resilience is related to many different areas and indicators, making it problematic to distinguish it as a separate trait. Kawachi and Berkman (2000) argue that it is essential to differentiate between indicators of the population's social status and indicators of social capital. The sub-index of social resilience includes three characteristics: vulnerable groups, quality of life, and poverty rates that are important in assessing a community's ability to absorb and adapt to a challenge. The community resilience subindex assesses the social capital of the municipality. Uphoff (2000) distinguishes two categories of social capital: structural and cognitive social capital. Structural social capital reflects the diversity of social organizations and networking. Cognitive, social capital is concerned with the mental processes, worldviews, values, norms, and beliefs that support interpersonal partnerships. In the context of resilience, social capital includes characteristics that can enhance a community's ability to restore social well-being, the economy, and health in the face of challenges or transform by adapting to future change (Norris et al., 2008). In this study, nine independent indicators reflecting security, mental health, citizenship, social and cultural activism, entrepreneurship, and creativity form the community resilience domain.

The institutional resilience sub-index seeks to capture those aspects of the community relevant to governance, reflecting polycentric governance and public-private partnerships. As it turned out in the Lithuanian context, this is the most challenging area to define in terms of resistance. Rupasingha et al. (2006) suggest the inclusion of an indicator of community-based civic organizations as an indicator of institutional strength. These organizations are heavily dependent on government support and subsidies, thus demonstrating the ability of local authorities to involve the local community in governance and service delivery. Voter turnout also shows citizens' citizenship and trust in local government (Chandre et al., 2011). Ronan and Johnston (2005) examine the role of institutions in shaping the social capital of communities, noting the importance of schools and cultural institutions maintained by local government, such as museums. The latter shows the long-term attitude of the local government in investing in values, human resources, and connections.

The domain of environmental resilience includes indicators that reflect the geographical area's natural resources and the local population's ecological behavior (use of public transport, waste sorting) (Sherzer et al., 2019; Lemke, Sakdapolrak, Trippl, 2023; Petruhhin, Kazjulja, 2025; Okunevičiūtė Neverauskienė, Linkevičius, Tvaronavičienė, 2025). In the resilience literature, the agricultural network is also considered an indicator of environmental resilience. It creates food production and supply chains that connect the community, create jobs for lower-skilled workers, and enable monitoring and control of natural resources (Cutter et al., 2014; Vyas-Doorgapersad, Shava, Olowu, 2023, Bai et al., 2025).

Challenges have been encountered in applying the complete set of indicators proposed by the BRIC methodology to the Lithuanian data system. The analysis of the environmental databases revealed that very few reliable, comparable quantitative indicators reflecting the state of ecology or the environment are collected at the municipal level. There is a lack of information on the activities of the network of emergency services (police, fire, postal), the use of the internet or telephone, and there is no data on the quality of municipal activities and services, social activity of the population and the availability of social services. When assessing the economic situation of municipalities, information on GDP per capita, poverty indicators are also missing. Despite the challenges of shaping the data system outlined above, the BRIC model can be adapted to the Lithuanian statistical system.

5. RESULTS OF THE LITHUANIAN MUNICIPALITY RESISTANCE SURVEY

The framework of indicators for the BRIC method was adjusted to measure the socio-economic resilience of critical service systems: social, economic, infrastructural, institutional, community, and environmental. The index was calculated for all 60 municipalities using data of the year 2024. The data was collected from 2 primary and 10 secondary publicly available statistical sources.

A sub-index correlation analysis was performed to analyze the structure of general index formation and understand the sub-index relations (Table 2). The most substantial relation was revealed between the economic and social resilience sub-indices (0.43) and between the community and infrastructural resilience sub-indices (0.38). A similar relationship is observed in other empirical studies of the BRIC resilience model (Scherzer et al. 2019; Cutter et al. 2010), confirming the interdependence of economic and social well-being and more developed infrastructure contributing to community social capital: communication, social activity, and entrepreneurship.

Table 1

The correlation of subindices

Resilience sub-indices	Economic	Social	Institutional	Infrastructural	Community	Environmental
Economic	1.00					
Social	0.43	1.00				
Institutional	–0.22	–0.36	1.00			
Infrastructural	0.15	0.13	–0.40	1.00		
Community	0.21	0.14	–0.31	0.38	1.00	
Environmental	0.00	0.03	0.35	0.01	–0.08	1.00

Source: Compiled by authors

The study results showed that the resilience of Lithuanian municipalities is very heterogeneous (Figure 1). The differences of the general index between municipalities are larger than between the individual sub-indices, which allows assuming that according to specific parameters, the municipalities are similarly developed. Still, due to structural differences in resilience the overall index is uneven.

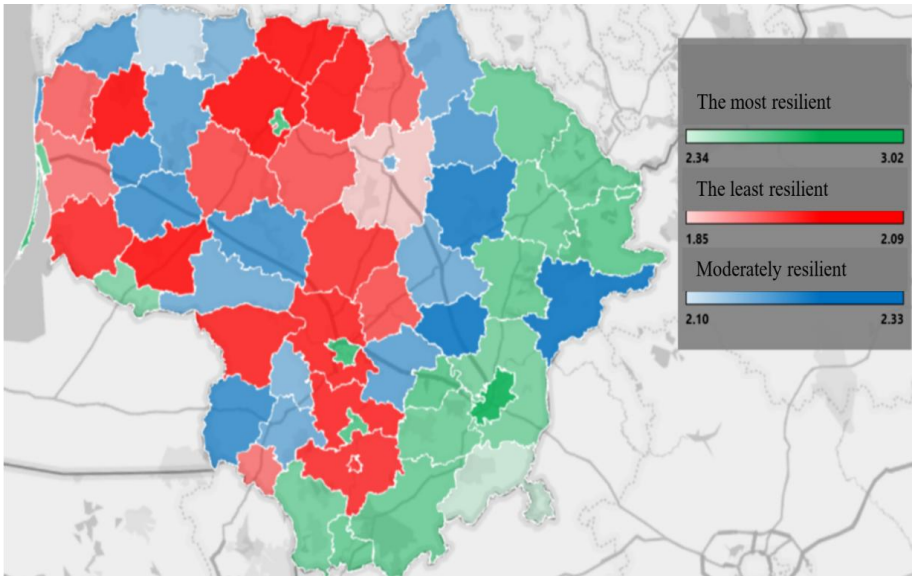

Figure 1. The grouping of Municipalities of Lithuania according to social-economy resilience index

Source: Compiled by authors

Using the multiple linear regression method significance of sub-indices to aggregated index was calculated. The analysis revealed that the most significant are the environmental sub-index, which explains 37% of the variance of the total resilience index values, and the infrastructural and economic sub-indices, which describe the 19.9% and 18% resilience values, respectively.

The most resilient municipalities are located in the southern and northern parts of Lithuania and in the largest cities: Vilnius, Kaunas, Klaipėda, and Šiauliai. These municipalities have more human and natural resources, greater social cohesion, business viability, and infrastructure to ensure access to basic services. Such municipalities can absorb the downturn caused by the crisis more easily due to lower socio-economic risks and adapt more quickly to change due to greater societal solidarity and business competitiveness. The municipalities in the central and western parts of the country show the weakest resilience. Such a distribution of municipalities on the map is mainly influenced by the community, social, economic, and environmental sub-indices on the final indicator.

The study unveiled that municipalities shape their resilience structure differently. Therefore, the resilience of municipalities using a single aggregate index should be assessed together with the analysis of sub-indices.

The calculated municipal resilience index revealed that the balanced development of different service systems has a greater impact on resilience than the strength of individual sectors. The analysis of sub-indices deviation unveiled how balanced is the development of different sub-indices in different municipalities. Higher color contrast (Figure 2) indicates municipalities where sub-indices value differs significantly.

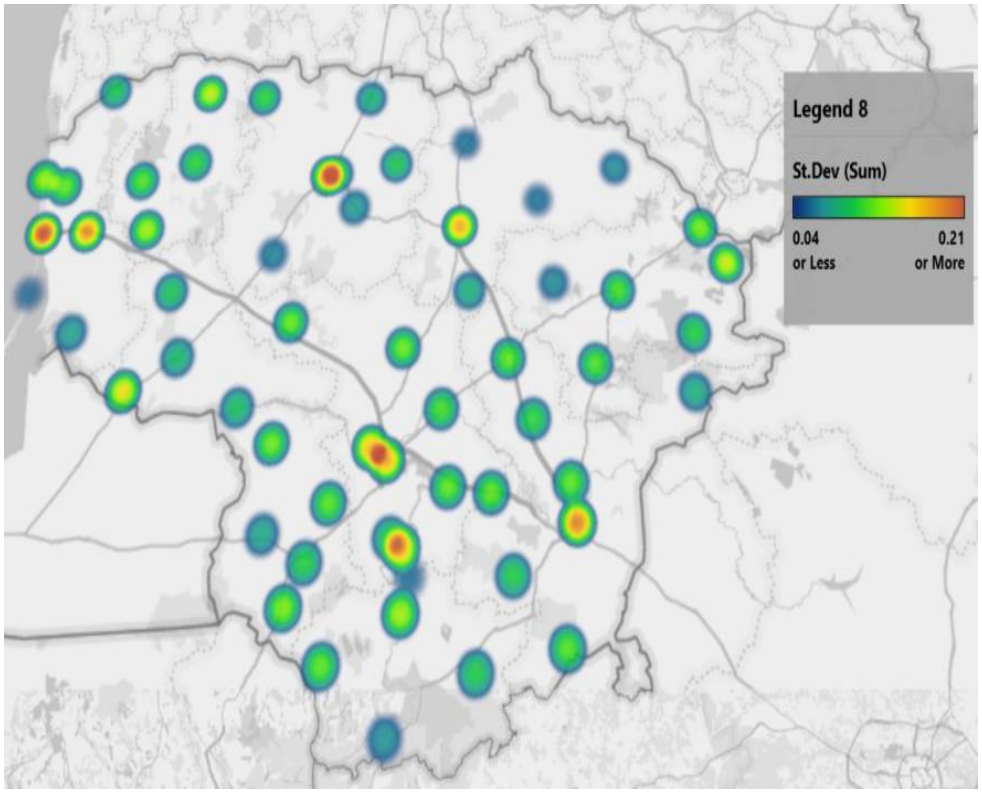

Figure 2. The types of municipalities according to the consistency of subindexes

Source: Compiled by authors

The largest gap between the resilience of different sub-indices is observed in large cities and districts of large cities. There are apparent strengths in their resilience, but there are also clear weaknesses. Such

resilience could not be considered balanced as it is dependent on several highly developed areas. The analysis of development gaps between sub-indices is vital for modeling sustainable development, allocating investments in a balanced way, and assessing the use and distribution of limited material, human and natural resources.

The study highlighted that the aggregate index structure is heterogeneous in highly resilient and low-resilience municipalities, as presented in Fig. 2. The most resilient municipalities (Table 3) show high results according to several sub-indices.

Table 3

The rating of the most and least resilient municipalities

Rating	Municipalities	Sub-indices						
		Index	Economic	Social	Institutional	Infrastructural	Community	Environmental
The most resilient municipalities								
1	Vilnius mun.	3,000	0,639	0,578	0,162	0,401	0,803	0,416
2	Neringa mun.	2,800	0,489	0,419	0,412	0,521	0,510	0,450
3	Kaunas mun.	2,637	0,484	0,380	0,186	0,555	0,664	0,368
4	Birštonas mun.	2,627	0,510	0,335	0,627	0,152	0,659	0,344
5	Šiauliai mun.	2,564	0,468	0,449	0,133	0,583	0,587	0,344
6	Elektrėnai mun.	2,533	0,478	0,591	0,236	0,287	0,561	0,380
7	Ignalina dstr. mun.	2,502	0,408	0,293	0,559	0,245	0,474	0,523
8	Molėtai dstr. mun.	2,501	0,544	0,416	0,374	0,163	0,421	0,582
9	Druskininka mun.	2,490	0,463	0,469	0,390	0,230	0,457	0,480
10	Visaginas mun.	2,483	0,284	0,418	0,214	0,424	0,562	0,583
The least resilient municipalities								
1	Panevėžys dstr. mun.	1,825	0,430	0,393	0,155	0,278	0,339	0,230
2	Kalvarija mun.	1,866	0,309	0,226	0,392	0,138	0,555	0,246
3	Klaipėda dstr. mun.	1,888	,491	0,520	0,067	0,144	0,525	0,141
4	Pasvalys dstr. mun.	1,909	0,418	0,320	0,357	0,220	0,388	,206
5	Kretinga dstr. mun.	1,924	0,483	0,371	0,190	0,153	0,497	0,230
6	Radviliškis dstr. mun.	1,928	0,391	0,363	0,264	0,214	0,461	0,235
7	Jonava dstr. mun.	1,933	0,326	0,383	0,179	0,176	0,530	0,339
8	Kelmė dstr. mun.	1,954	0,427	0,279	0,335	0,195	0,436	0,282
9	Alytus mun.	1,986	0,380	0,378	0,126	0,254	0,584	0,264
10	Alytus dstr. mun.	2,014	0,421	0,332	0,258	0,206	0,408	0,387

Source: Compiled by authors

Among the ten most resilient municipalities, the six infrastructure and four economic and social resilience sub-indices are in the top ten. And the least resilient municipalities, except Klaipėda district municipality, have poorer results in all areas. Large cities have higher scores on the infrastructure and community resilience sub-indices and low scores on the institutional and environmental ones, while the social sub-index varies widely. The resilience of regional centers and neighboring municipalities is repetitive: all sub-indices in the district are similarly developed, and a large gap between different sub-indices characterizes the city.

The study showed that the structure of municipalities' resilience is different, so community resilience assessment using a single aggregate index should be implemented only in conjunction with the analysis of sub-indices. The BRIC method can be applied to the analysis of resilience of Lithuanian municipalities, but the comparison between municipalities should be made with reservations, because the country's municipalities differ significantly in their size and level of development.

6. CONCLUSION

The concept of resilience provides a new understanding of crises, recessions, and their impact on economic development. It is common to believe that a recession has only a negative effect on the economic growth of a region or country, but the abundance of research on resilience suggests that shocks and even the resulting recession in resilient systems are driving impetus for change and progress.

The BRIC (Baseline Resilience Indicators for Communities) approach can be adapted to Lithuania's indicator systems. A composite resilience index covering six service systems allows for a methodically sound assessment of the municipalities to absorb crises and adapt to future challenges.

An empirical study of the resilience of Lithuanian municipalities confirmed that the socio-economic resilience of municipalities could be assessed by evaluating the development of local service systems. The compiled aggregate resilience index included resilience sub-indices for six service systems (social, economic, infrastructural, environmental, institutional, and community).

The analysis of the resilience sub-indices of individual service systems revealed significant inequalities in the development of different service systems and vulnerable areas of municipalities, highlighting the need for an even distribution of resources.

The sub-index correlation analysis revealed the most significant correlation is between the municipality's economic and social resilience sub-indices (0.43) and between the community and infrastructural resilience sub-indices (0.38). A similar relationship is observed in other empirical studies of the BRIC community resilience model and confirms theoretical insights that community resilience is significantly determined by socio-economic conditions, social capital, and well-developed and accessible infrastructure.

The differences in the overall index between municipalities are larger than in the individual sub-indices, which suggests that municipalities are similarly developed in terms of specific parameters, but the overall index is uneven due to structural differences in resilience.

Analysis of the distribution of municipalities by sub-indices revealed that in terms of resilience of Lithuanian municipalities, regions in the eastern part of Lithuania have more natural resources, and large cities have better economic indicators.

In order to examine the regularities of the community resilience index, all municipalities were analyzed according to the intensity of deviation of the sub-indices. The analysis showed that the most significant gap between the different resilience sub-indices is characteristic of large cities and the districts of large cities. Their index has obvious strengths, but there are also obvious weaknesses.

The structural picture of resilience in each municipality is very different and cannot be objectively reflected in a single aggregate index. Some municipalities have a steady development in all six aspects of resilience, while others have a large gap between different areas. When examining the resilience of a particular municipality, it is necessary to assess the development of all its resilience domains.

The model makes it possible to compare living conditions in municipalities, covering essential aspects of the community environment, and helps to find the answer to the question of why in some municipalities it is safe and good to live, while in others positive changes cannot be achieved for many years.

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