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# SPATIAL DISPARITIES IN CULTURAL TOURISM: A MULTIDIMENSIONAL ANALYSIS OF MUSEUM ATTENDANCE DYNAMICS IN BULGARIA

**Mariya VRACHOVSKA [1*], Olga MANCHEVA-ALI [2]**

[1] "St. Cyril and St. Methodius" University of Veliko Tarnovo, Faculty of Economics, Department of Finance and Accounting, Veliko Tarnovo, Bulgaria; mvrachovska@ts.uni-vt.bg (M.V.)
[2] "St. Cyril and St. Methodius" University of Veliko Tarnovo, Faculty of Economics, Department of Tourism, Veliko Tarnovo, Bulgaria; o.mancheva@ts.uni-vt.bg (O.M.A.)

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**Abstract:** This study aims to identify and analyse spatial disparities and structural stratification of regional museum activity in Bulgaria over a 13-year period (2012-2024). The primary objective is to evaluate the stability, growth trajectory, and resilience of regional cultural supply models in response to external and macroeconomic shifts, specifically the COVID-19 pandemic. A multidimensional statistical analysis was applied to panel data from the National Statistical Institute and the Institute for Market Economics, encompassing all 28 administrative districts in Bulgaria. Quartile grouping (based on visits per 1000 inhabitants) was utilized to differentiate clusters, while long-term dynamics and crisis resilience were assessed through specific indicators: Coefficient of Variation (CV), Compound Annual Growth Rate (CAGR), Sensitivity Index (SI), and Recovery Index (RI). Through this approach, the districts were categorized into three distinct performance tiers: High-level (Leaders), Mid-level, and Low-level. The analysis reveals significant structural imbalances and high systemic volatility across all clusters, indicating a critical dependence on incidental tourist flows. A "scale paradox" was identified, whereby districts with moderate attendance volumes and a developed local product demonstrate considerably higher post-crisis adaptability compared to traditional leaders. Although all groups exhibit coefficients of variation exceeding 40%, the Mid-level segment achieves the highest annual growth (4.95%) and positive recovery (17.15%), outperforming the top-tier districts, which record slower growth (1.62%) and negative post-pandemic recovery (-12.08%). Empirical profiles highlight stable cores (Veliko Tarnovo, Gabrovo), strategic event legacies (Plovdiv), and nature-integrated recovery (Smolyan), contrasting with transit-dependent declines (Vidin). The high structural volatility underscores an urgent need for a conceptual shift in regional cultural policies. Strategic management should pivot towards active audience development and integrated regional tourism products, linking public subsidies to institutional flexibility and proven post-crisis resilience rather than merely static volumes.

**Keywords:** cultural tourism, museum attendance, regional disparities, economics of cultural activities, resilience to crises, attendance, structural volatility

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## INTRODUCTION

In recent decades, the theoretical framework of the cultural industry and its economic impact has undergone a significant conceptual transformation. At the heart of this shift lies cultural tourism, which transforms heritage from a static resource into a driver of the „experience economy". In this context, museums as cultural sites are changing their traditional functions from passive repositories of historical memory, establishing themselves as potential active economic factors for regional development. Numerous international studies prove that cultural consumption is a key factor in promoting cultural tourism, creating new jobs, and stimulating urban renewal (Plaza, 2010; Throsby, 2012).

Contemporary analysis view cultural infrastructure not as a burden on public budgets, but as a strategic investment that enhances the overall competitiveness of regions, stimulates innovation, and attracts human capital (OECD, 2022). In the case of Bulgaria, research also proves that cultural industries and the effective socialization of cultural-historical heritage are directly related to mitigating regional imbalances and improving the quality of life in local communities.

Events falling within the scope of cultural industries are increasingly interpreted as a contemporary sector; as such, they are integrated into micro- and macroeconomic strategies as effective tools for generating economic value (Kostadinova, 2024). Despite the economic potential of the sector, the geographical distribution of cultural supply and consumption is highly heterogeneous. Spatial differences often lead to the formation of a clearly defined "centre-periphery" model, in which a limited number of urbanized centres concentrate the main visitor interest and financial

* Corresponding author



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flows, while peripheral areas lag behind in their cultural and economic development (Richards, 2018; Institute for Market Economics, 2023). Evaluating the efficiency and attraction of regional museum networks requires a specific methodological approach that takes these disparities into account (Barrio et al., 2014).

For the objective measuring of regional differences, this study applies relative indicators (such as attendance per 1000 population) and a clustering approach, which allow for the isolation of the scale effect. Furthermore, to capture the actual development trend, contemporary econometrics requires the application of time-series analysis, which ensures precise tracking of long-term trends and eliminates random short-term fluctuations (Cellini & Cuccia, 2013).

The works analyzed so far examine various geographical regions, yet their conceptual frameworks provide a relevant toolkit for investigating the factors generating spatial disparities in cultural tourism and the resulting sociocultural deformations. The analysis of spatial inequalities in attendance requires deconstructing the components that form tourist attractiveness. In this regard, empirical studies demonstrate that while cultural significance is a necessary prerequisite for site attractiveness, it is the tourism infrastructure and foundational conditions that act as the primary determinants of tourist demand (Kadyrbekova et al., 2024). Key success factors include destination safety, accessibility for persons with special needs, guide services, and information provision. Extrapolated to the Bulgarian context, this suggests that the marginalization of museums in peripheral areas is not necessarily a function of a deficit in cultural-historical heritage, but rather a result of spatial asymmetries in the developed infrastructure and a lack of adequate reception conditions.

On the other hand, the high concentration of tourist flows in major cultural centers generates serious risks to local authenticity. Mass tourism often acts as a catalyst for the commodification of culture, leading to the erosion of sociocultural assets and the production of inauthentic artefacts (Alamineh et al., 2023). Under these conditions, cultural heritage is transformed into a "packaged commodity" depriving local communities of control over their own identity and autonomy (Davis, 2025). In Bulgaria, the high attendance rates at prominent national museums and heritage sites have facilitated their commercialization, risking the displacement of their educational and social mandates by purely consumerist objectives.

The multidimensional nature of cultural tourism also necessitates an examination of its effects on the social environment and local demographics through the prism of so-called "tourism gentrification". This process causes the physical displacement of the local population and the restructuring of urban spaces solely to serve external visitors (Davis, 2025). For the Bulgarian reality, this means that historical cores with the highest density of tourist flow (such as Plovdiv, Veliko Tarnovo, or Nesebar) are vulnerable to the phenomenon of cultural infrastructure being alienated from the city's residents themselves. The synthesis of the literature confirms that while peripheral museums suffer the negative impacts of infrastructural deficits, high-attendance centers are faced with the structural threats of commodification.

Parallel to the analysis of long-term growth, contemporary academic literature places an increasingly strong emphasis on the concept of resilience of the cultural sector toward external macroeconomic and social peaks. The unprecedented crisis caused by the COVID-19 pandemic acted as large-scale diagnostics, revealing high structural vulnerability of the museum network on a global scale (Agostino et al., 2020). According to a number of international reports, the institutions with a high dependence on conjunctural factors, relying primarily on incidental tourist flows and lacking strategies for building a loyal local audience, have suffered the most severe recessions and demonstrate extremely slow recovery rates (ICOM, 2021; UNESCO, 2022). This necessitates that the study of the sector goes beyond the analysis of static volumes. For this purpose, specialized indicators are introduced, such as the Sensitivity Index (SI) and Recovery Index (RI), combined with the measurement of the long-term Compound Annual Growth Rate (CAGR) and coefficients of variation.

Through this multidimensional toolkit, the volatility of visitor interest and the ability of regional museum systems to adapt under force majeure conditions can be precisely assessed. Spatial inequalities are a central problem in contemporary research on regional economics and geography (Tsiotas & Polyzos, 2025). There is a clear polarization within the pan-European space, determined by the concentration of innovation and capital in the central economic belt (the "Blue Banana"). As a result, the peripheral regions, Atlantic and Eastern Europe, remain economically backward. Overcoming these disparities and achieving convergence between regions is a primary goal of the European cohesion policy. In Bulgaria, significant spatial and regional differences are also observed, with strategic pathways being sought to mitigate intra-regional disparities (Varadzhakova, 2021). Cultural supply and visitor interest in the country form their own micro-cores and deep peripheries, which makes the implementation of unified national tourism policies ineffective.

Scientific literature views tourism not only as an economic sector but also as a powerful tool for solving urban problems and stimulating sustainable regional development Museums and cultural-historical heritage play a significant role in shaping the attractiveness of destinations and integrating them into tourism products with unique competitive advantages (Tsvetanova, 2018). At the same time, alternative forms of tourism, anchored in individual travel and specialized interests such as wellness, sports, and self-actualization, function as complements to these traditional frameworks. Their development is primarily carried out by small and medium-sized enterprises (SMEs), which are flexible, innovative, and vital for the local economy (Zlateva et al., 2011). The relation between these two forms of tourism brings potentially strong benefits for the regions.

Tourist supply and demand is often characterized by spatial polarization and uneven distribution (Dimova et al., 2025). Research indicates a strong territorial concentration of museum visits in Bulgaria, but the COVID-19 pandemic has exacerbated existing intra-regional and spatial disparities in tourism and entirely changed the topology of tourist trips (Varadzhakova, 2021). In order for domestic tourism to be an effective driver of the economy, the obstacles to its development must be studied, including the negative perceptions of tourists. The image of the destination plays a key role in shaping consumer attitudes, and behavioural models such as Eisen and Fishbein's "Theory of Planned Behaviour" are often used to measure them quantitatively (Varadzhakova et al., 2025). Literary sources describe a variety of contemporary

methodologies for investigating these phenomena. The existing spatial disparities necessitate integrated approaches, combining innovative spatial planning methods and targeted policies (Niță & Drăguleasa, 2025; Dimova et al., 2025).

Despite the rich theoretical foundation in the field of cultural economics, empirical studies focused on the quantitative assessment of regional structural stratification and the volatility of museum activity in Bulgaria through the analysis of long-term panel data remain highly limited. The main focus of the present study is to identify and analyse the spatial disparities and structural stratification of regional museum activity in Bulgaria for the period 2012-2024. By applying a complex statistical-econometric model, the study aims to evaluate the stability, long-term growth trajectory, and resilience of the distinct territorial profiles of cultural consumption relative to external macroeconomic changes.

**MATERIALS AND METHODS**

For the purpose of providing the information for the study, official and publicly available data were used, extracted from the official website of the Institute for Market Economics. To assess regional profiles, the average annual museum attendance per 1000 people was selected as a comprehensive measure of museum viability and intensity of museum activity (Average annual number of visits per 1000 population – AAV/1000=$x_t$). The use of relative rather than absolute volumes is intended to eliminate effects arising from scale (population density and museum network) and to ensure comparability between territorial units. The source of the primary data needed to calculate the museum activity intensity indicator is provided by the national statistical system, and in particular by the National Statistical Institute. The study period is 13 years (2012–2024) and refers to all 28 districts (365 observations).

This study employs a statistical and econometric approach to analyze regional museum activity in Bulgaria, utilizing time-series analysis and descriptive statistics. Data processing was conducted via MS Excel. The methodological framework is organized into three consecutive stages, ensuring the reliability and objectivity of the resulting findings and conclusions.

*The first stage* involves establishing a typology of regional disparities in museum activity through statistical clustering. To categorize the districts into homogeneous groups, a quartile grouping methodology is employed. For each district, the mean attendance rate is calculated over a thirteen-year period (2012–2024), providing a basis for long-term positioning. The boundaries of these statistical clusters are defined using the first (Q1) and third (Q3) quartiles of the overall distribution.

*The second stage* evaluates intergroup variation and stability, alongside the degree of sectoral development and sensitivity to external or exogenous factors. To assess the intensity of museum activity, key descriptive statistics and measures of central tendency are derived, including the mean, mode, median, range, and kurtosis.

To check the homogeneity of the population, measures of dispersion are calculated – Standard Deviation (SD) and Coefficient of Variation (CV), both formally introduced into statistical analysis by Pearson. The CV is utilized here to assess relative dispersion and serves as a primary indicator of temporal inequality, highlighting stratification between years in the study period.

Sensitivity Index ( $SI = \frac{x_{2020} - x_{2019}}{x_{2019}}$ ) and Recovery Index ( $RI = \frac{x_{2024} - x_{2019}}{x_{2019}}$ ) are used as indicators for assessing the sensitivity and resilience of museum activity toward factors external to the system (such as COVID-19). In the SI and RI formulas, $x_{2019}$ represents the average annual museum visits per 1000 population (AAV/1000) in the pre-pandemic baseline year (2019), $x_{2020}$ denotes the indicator's value during the acute crisis year (2020), and $x_{2024}$ reflects the value in the final post-crisis observation year (2024). The SI and RI are calculated as the relative percentage deviation of the number of visits (AAV/1000) for 2020 and 2024, respectively, relative to a fixed base of 2019 (2019=100).

This method measures the cumulative deviation from the last reference year before the pandemic, providing an objective basis for comparison (World Tourism Organization, 2022). Specifically, the SI measures the immediate vulnerability of regional museum networks to external shocks, while the RI quantifies the capacity of these institutions to return to their pre-crisis performance levels.

The Compound Annual Growth Rate ( $CAGR = (\frac{x_{2024}}{x_{2012}})^{1/t} - 1$ ) was selected as an indicator to assess long-term development. In this formula, $x_{2012}$ and $x_{2024}$ represent the average annual visits per 1000 population in the initial year (2012) and the final year (2024) of the panel, respectively, while *t* denotes the number of annual intervals between the start and end years for which the dynamics of visitor flow are tracked (t=12). The CAGR provides a smoothed annual growth rate over the entire study period, which is essential for eliminating short-term volatility and identifying the underlying structural trajectory of the sector, following Eurostat's econometric approach (Eurostat, 2021).

The Sensitivity Index (SI), the Recovery Index (RI), and the Compound Annual Growth Rate (CAGR) at the cluster level are derived from the arithmetic mean of the individual indices of the constituent districts. This approach was adopted to mitigate the disproportionate influence of districts with the largest absolute visitor volumes, thereby ensuring that the average institutional dynamics at the regional level are accurately reflected within each group.

For a more precise study of the intragroup dynamics, the standard deviation (SD) and the coefficient of variation (CV) for the clusters are calculated using an aggregated panel dataset. Instead of using district-level means, all annual observations for the period 2012–2024 are included in the analysis (Q4, n=91; Q2–Q3, n=182; Q1, n=91).

All indicators are calculated using primary statistical data from the National Statistical Institute (NSI, 2025) and regional datasets from the Institute for Market Economics (IME, 2025).

This approach facilitates the simultaneous analysis of cross-sectional variation, reflecting disparities in attendance across districts and temporal fluctuations occurring on an annual basis. *In the third and final stage*, the research focuses on systematizing and analyzing the emergent behavioral patterns of the regional clusters to establish a clear classification of their developmental trajectories. The analysis is limited by the scale of the data (aggregated at the district level), which hinders the examination of internal variation and specificities of behavior at the local level.

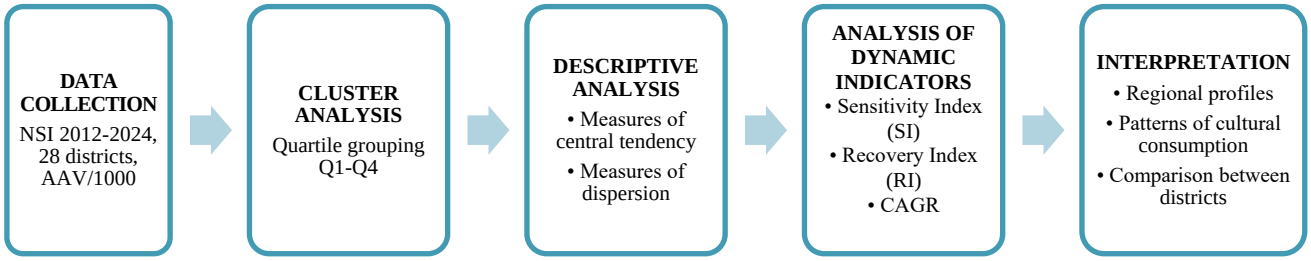



Figure 1. Research Design and Analytical Framework (Source: Authors)

Figure 1 illustrates the sequence of the research approach and methods. Research Hypothesis: The districts in Bulgaria differ not only in the number of visitors but form distinct patterns of cultural consumption, which are characterized by their specific long-term dynamics, sensitivity to external shocks, and varying capacity for post-crisis recovery.

## RESULTS AND DISCUSSION

The empirical data on museum activity across Bulgarian districts reveal a pronounced spatial heterogeneity. Relying on national averages would, therefore, skew the analysis and obscure significant regional disparities. In order to eliminate the subjective factor in determining the boundaries between individual districts and to ensure an objective comparative analysis of museum attendance across the 28 districts of Bulgaria for the period 2012-2024, the quartile method was chosen. This categorization facilitates a more nuanced analysis of regional disparities and the resilience of district-level museum systems in the face of exogenous shocks, such as the COVID-19 pandemic.

Table 1. Statistical clusters in Bulgaria (Source: Authors)

| High Level (Leaders) | Mid-Level | | Low-Level |
|---|---|---|---|
| Veliko Tarnovo | Blagoevgrad | Razgrad | Vratsa |
| Vidin | Burgas | Ruse | Kardzhali |
| Gabrovo | Varna | Silistra | Montana |
| Dobrich | Kyustendil | Sliven | Smolyan |
| Sofia | Lovech | Sofia (capital) | Targovishte |
| Stara Zagora | Pleven | Pazardzhik | Haskovo |
| Shumen | Plovdiv | Pernik | Yambol |

The cluster analysis yields three distinct statistical groupings (Table 1): high level – leaders, covering areas with an arithmetic mean attendance above 904.67 (Q1); medium level (Q2 and Q3), covering areas with an arithmetic mean attendance in the range from 250.79 to 904.67; and low level, covering areas with an arithmetic mean attendance below 250.79 (Q4). The established maximum arithmetic mean is 3035.40 and the median is 475.16.

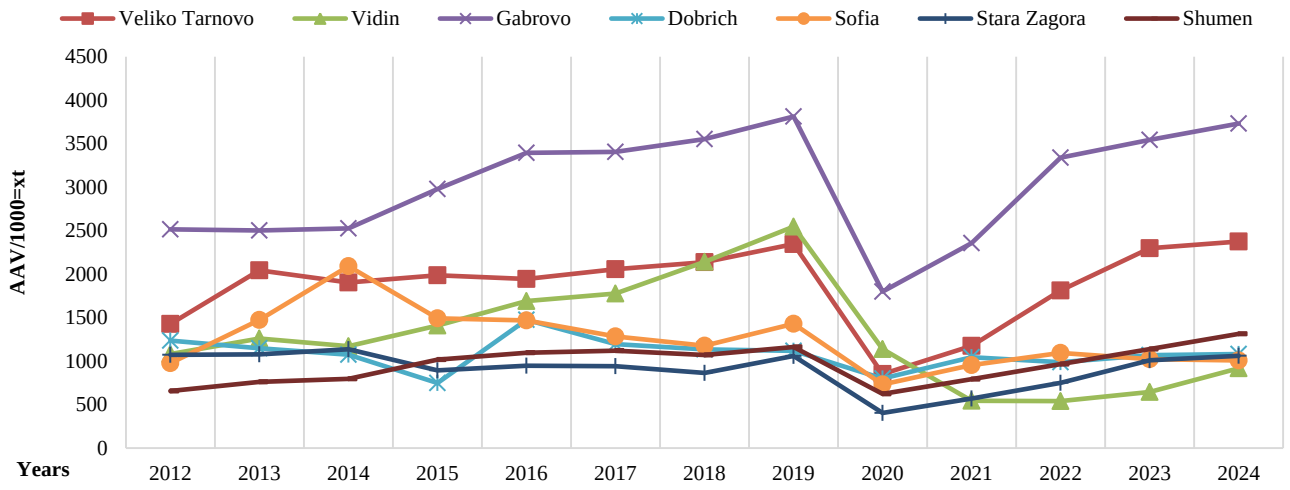



Figure 2. Average annual museum attendance per 1000 population by districts for the period 2012–2024 (High Level)
(Source: Compiled by the authors based on National Statistical Institute NSI data)

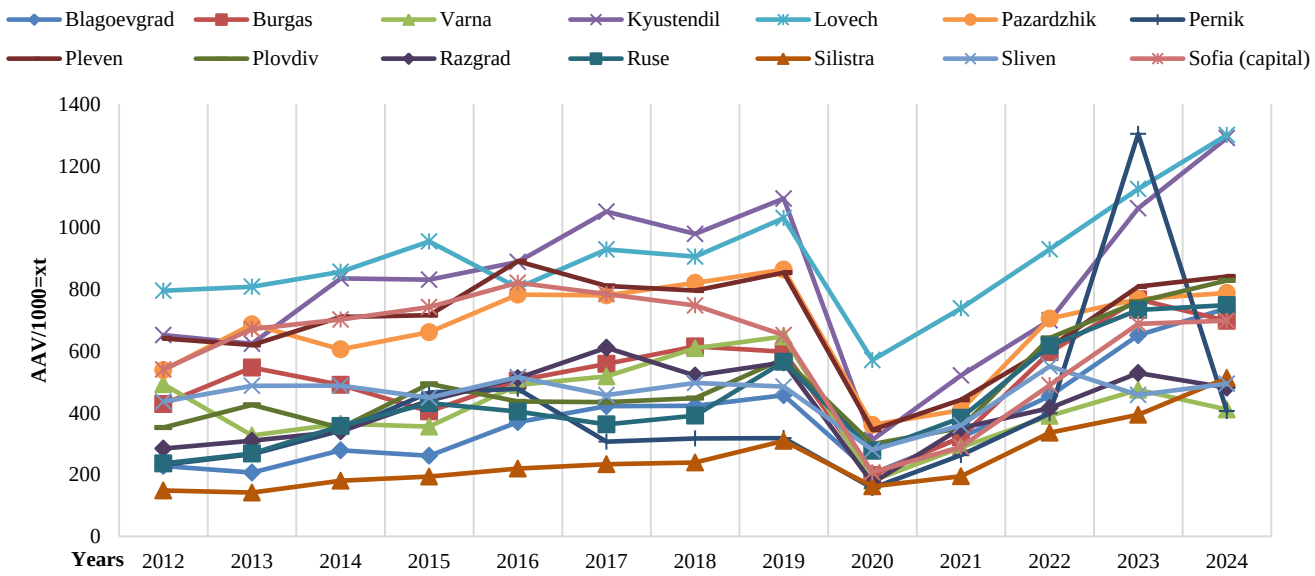



Figure 3. Average annual museum attendance per 1000 population by districts for the period 2012–2024 (Mid-Level)
(Source: Compiled by the authors based on National Statistical Institute NSI data)

To provide a clearer visualization of the data, Figures 2, 3, and 4 present the specific values for the high, medium, and low levels, respectively. The average annual number of visits per 1000 population (AAV/1000=$x_t$) is plotted on the vertical axis, while the horizontal axis represents the years.

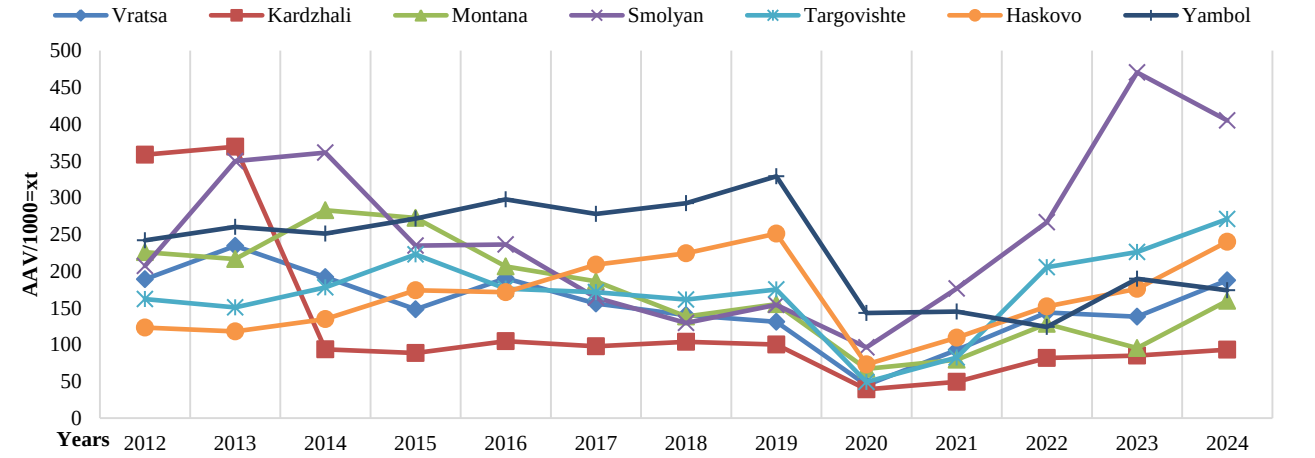



Figure 4. Average annual museum attendance per 1000 population by districts for the period 2012–2024 (Low-level)
(Source: Compiled by the authors based on National Statistical Institute NSI data)

It is assumed that, with the presence of policy and consistency in the management of museum activities, high attendance in the leader districts is linked to relatively lower volatility, a positive development trend, and a better capacity for and faster recovery from crises due to their greater financial and organizational resources. In contrast, with low-level museums, systemic inertia, greater vulnerability to shocks, and highly limited opportunities for attracting visitors and achieving sustainable growth is observed. Table 2 presents the statistical outputs for the assessment of intergroup variation, developmental stages, and the sensitivity of the museum system to external shocks.

Table 2. Patterns of museum attendance (Source: Authors)

| | SD | Mean | $CV_{2012-2024}$ (%) | $CV_{2012-2019}$ (%) | CAGR (%) | SI (%) | RI (%) |
|---|---|---|---|---|---|---|---|
| **Leaders** | 810.58 | 1487.09 | 54.51 | 47.92 | 1.62 | -51.04 | -12.08 |
| **Mid-level** | 239.38 | 534.67 | 44.77 | 41.73 | 4.95 | -57.56 | 17.15 |
| **Low-level** | 85.37 | 181.21 | 47.11 | 36.38 | -0.06 | -167.19 | 29.33 |

In the study of data homogeneity, descriptive statistics by districts report a normal distribution, with the exception of the Pernik district, where there is a pronounced excessive kurtosis 9.82 (>8) with a range of 1148, a maximum of 1304, and a variation percentage 70.66%. When checking for extreme values at the cluster level using the box plot method, an unusually high observation was identified at the mid-level – specifically for Pernik ($x_{2023}$=1304). To eliminate the distorting influence of this outlier on the data dispersion, this atypical data point was excluded when calculating the coefficient of

variation ($CV_{2012-2024}$) for the mid-level. The volatility of the data shows that even when extreme deviations are taken into account, the variation in the three clusters studied exceeds the critical thresholds for statistical homogeneity (Table 2).

The comparative analysis of the coefficients of variation for the pre-pandemic period ($CV_{2012-2019}$) and for the entire period ($CV_{2012-2024}$) reveals the presence of persistent intragroup volatility, exceeding the 30% threshold. At the mid-level, the indicator decreases from 44.77% to 41.73%, and for the leaders – from 54.51% to 47.92%. The fact that variation remains persistently high (over 40%) even among leading destinations refutes the premise that high visitor flow is a guarantee of stability and suggests that high instability is a systemic trait of the sector that precedes the global pandemic. The analysis of variation reveals specific intragroup dynamics. While individual district-level coefficients of variation for the 13-year period predominantly remain below the 30% threshold, the aggregated cluster indicators exceed 40%. This statistical divergence indicates that while the cluster is homogeneous in its profile (characterized by high attendance), it remains highly heterogeneous in terms of scale. The high overall variation is generated not so much by the instability of individual districts over time, but by the significant gaps between them within the group itself.

The selection of the CAGR for this study is justified by its capacity to smooth out short-term fluctuations, providing a more consistent evaluation of long-term growth dynamics. Although originally developed in the financial sector, in the context of cultural economics, CAGR provides an objective assessment of growth by eliminating the influence of extreme annual fluctuations (outliers). Its use is particularly appropriate in light of the statistical anomaly of 2020, as CAGR allows for an assessment of the sector's sustainable trend, abstracting from temporary declines. Through this method, a higher degree of comparability between individual clusters is achieved, by focusing on the growth rate relative to each region's own accumulated base rather than just absolute attendance volumes. The calculations, presented in Table 2 reveal that the primary driver of long-term growth is not the cluster of leaders (which report a relatively slow average annual rate of 1.62%), but that of the mid-level, which achieves the highest annual growth (4.95%). At the same time, the low-level districts remain in a state of stagnation with a zero to slightly negative trend (CAGR=-0.06%).

SI and RI, applied to museum activities, are indicators for the evaluation of resilience to factors external to the system and force majeure conditions (such as the COVID-19 pandemic). The analysis of the indices reveals unexpected recovery dynamics. The leaders cluster reports not only a decrease (SI=-51.04%) but also a negative recovery index (RI=-12.08%), indicating difficulty in adapting to the changed environment. At the same time, the districts of the Mid-level, despite a similar initial decline (SI=-57.56%), manage to quickly compensate for losses and generate a positive recovery index (RI=17.15%). The results show higher resilience in this segment, most likely as a result of reorienting toward local tourist flows. The statistical analysis validates the research hypothesis, confirming that Bulgarian districts exhibit distinct patterns of cultural consumption. These patterns diverge not only in terms of absolute visitor volumes but also regarding their stability, growth trajectories, and resilience in the face of crises. The geographical distribution of the data outlines structural imbalances, the explanation of which requires accounting for a number of socio-economic and tourism factors.

Based on the calculated indicators (CV, CAGR, SI, and RI) for the three distinct clusters (Tables 3, 4 and 5), the following specific regional profiles emerge:

- For the districts falling into the high level (Leaders) – high visitor volume is observed, but with partial protection. A stable core is formed, such as Veliko Tarnovo and Gabrovo, which stand out as balanced destinations. They maintain low variation (CV of 24.55% and 20.78%, respectively) and positive long-term growth (CAGR of 4.34% and 3.34%). This structural robustness stems from the established cultural-historical product that generates year-round interest, as well as proven interest in domestic educational tourism. At the other extreme of the same group is Vidin. The district shows high instability (CV=47.02%), a negative trend (CAGR=-1.35%), and an extremely weak recovery capacity (RI=-63.94%). This profile is directly attributable to a high reliance on international transit tourism (river cruises along the Danube). As Radic et al. (2020) note, cruise tourism suffered the deepest collapse during the pandemic, which explains the inability of local museums to recover their indicators.

Table 3. Variation and dynamic indicators (High level) (Source: Authors)

| **High Level (Leaders)** | | | | | | |
|---|---|---|---|---|---|---|
| **District** | **SD** | **Mean** | **$CV_{2012-2024}$ (%)** | **CAGR (%)** | **SI (%)** | **RI (%)** |
| Veliko Tarnovo | 460.22 | 1873.92 | 24.56 | 4.34 | -63.73 | 1.24 |
| Vidin | 610.08 | 1297.39 | 47.02 | -1.35 | -55.26 | -63.94 |
| Gabrovo | 630.85 | 3035.39 | 20.78 | 3.34 | -52.78 | -2.12 |
| Dobrich | 182.94 | 1086.15 | 16.84 | -1.12 | -28.51 | -3.40 |
| Sofia | 349.71 | 1246.62 | 28.05 | 0.25 | -48.81 | -29.51 |
| Stara Zagora | 216.37 | 907.08 | 23.85 | -0.09 | -61.79 | 0.09 |
| Shumen | 215.52 | 963.08 | 22.38 | 5.95 | -46.39 | 13.08 |

- For the districts falling within the mid-level – they show dynamic development and event-related variation. This cluster (Q2 and Q3) demonstrates the highest potential for growth and adaptability (average CAGR=4.95% and RI=17.15%). However, the intragroup dynamics are highly heterogeneous. In this group, the effect of cultural policies is observed. A notable case is Plovdiv (CAGR=7.40%, RI=44.17%), the performance of which underscores the enduring legacy of strategic initiatives such as “European Capital of Culture 2019”. Such large-scale events not only attract momentary attention but also build lasting habits of cultural consumption (Garcia & Cox, 2013).

Table 4. Variation and dynamic indicators (Mid-level) (Source: Authors)

| Mide-level | | | | | | |
|---|---|---|---|---|---|---|
| **District** | **SD** | **Mean** | **$CV_{2012-2024}$ (%)** | **CAGR (%)** | **SI (%)** | **RI (%)** |
| Blagoevgrad | 165.56 | 385.46 | 42.95 | 10.28 | -55.58 | 61.49 |
| Burgas | 153.20 | 517.53 | 29.60 | 4.14 | -66.89 | 16.72 |
| Varna | 129.56 | 426.77 | 30.36 | -1.50 | -72.18 | -36.48 |
| Kyustendil | 268.48 | 833.85 | 32.20 | 5.85 | -71.48 | 17.92 |
| Lovech | 181.94 | 903.85 | 20.13 | 4.18 | -44.62 | 26.09 |
| Pleven | 164.20 | 699.15 | 23.49 | 2.29 | -59.60 | -1.52 |
| Plovdiv | 164.30 | 492.00 | 33.40 | 7.40 | -48.00 | 44.17 |
| Razgrad | 127.15 | 425.38 | 29.89 | 4.49 | -69.27 | -14.56 |
| Ruse | 169.77 | 444.38 | 38.20 | 10.10 | -50.97 | 32.57 |
| Silistra | 109.13 | 251.08 | 43.47 | 10.85 | -47.57 | 66.02 |
| Sliven | 70.14 | 458.23 | 15.31 | 1.05 | -42.27 | 1.86 |
| Sofia (capital) | 187.79 | 618.23 | 30.38 | 2.17 | -68.25 | 7.21 |
| Pazardzhik | 156.91 | 674.77 | 23.25 | 3.23 | -58.22 | -8.80 |
| Pernik | 95.33 | 328.92 | 32.89 | 4.75 | -50.94 | 27.36 |

Another specific feature of the mid-level group is the contrast among seaside destinations. A significant discrepancy is observed between the two main Black Sea districts. While Burgas maintains a robust upward trajectory (CAGR=4.14%) and has surpassed its pre-crisis benchmarks (RI=16.72%), Varna exhibits protracted stagnation (CAGR=-1.50%) and a delayed recovery phase (RI=-36.48%). These findings corroborate Russo's (2002) thesis regarding the inherent risks of mass summer tourism, where cultural assets often remain marginalized unless a proactive strategy for their integration into a contemporary product is executed – a transition Burgas has effectively realized in recent years. The third specific feature is related to event-based deviations. A prominent outlier is the Pernik district, which exhibits extraordinary volatility (CV=70.66%) with a pronounced peak in 2023 (AAV/1000=1304). This profile exemplifies the episodic impact of event tourism: the "Surva" festival, returning in 2023 after a three-year hiatus, generated a statistical spike that does not align with the baseline museum attendance observed throughout the rest of the period. As Getz (2008) points out, events generate revenue but create strong temporal fluctuations and complicate long-term planning. After excluding extreme 2023 observation, the variation remains within the limits of statistical homogeneity (CV=32.89%).

- For the districts falling within the low-level – high vulnerability is observed. The least represented cluster (Q4) comprises districts with an average of 85 visits per 1000 population. This group is the most sensitive to external shocks (SI=-167.19%) and is in a state of long-term stagnation (CAGR=-0.06%). In districts such as Kardzhali (CV=83.20%, CAGR=-10.62%) and Yambol (RI=-47.11%), a pronounced negative trend is observed. This decline is attributable to demographic contraction, chronic underinvestment in specialized infrastructure, and a peripheral geographic position relative to major tourist corridors. A striking exception within this group is Smolyan, which has emerged as a national leader in recovery (RI=162.99%) with robust sustained growth (CAGR=5.75%). This can be explained by the post-COVID trend of seeking alternative destinations integrated with nature (Gössling et al., 2020).

Table 5. Variation and dynamic indicators (Low-level) (Source: Authors)

| Low-level | | | | | | |
|---|---|---|---|---|---|---|
| **District** | **SD** | **Mean** | **$CV_{2012-2024}$ (%)** | **CAGR (%)** | **SI (%)** | **RI (%)** |
| Vratsa | 48.46 | 152.77 | 31.72 | -0.09 | -191.11 | 42.75 |
| Kardzhali | 106.44 | 127.93 | 83.20 | -10.62 | -156.41 | -7.00 |
| Montana | 69.28 | 170.08 | 40.74 | -2.84 | -131.34 | 3.23 |
| Smolyan | 114.64 | 249.92 | 45.87 | 5.75 | -60.42 | 162.99 |
| Targovishte | 57.99 | 171.54 | 33.81 | 4.38 | -257.14 | 54.86 |
| Haskovo | 54.25 | 165.77 | 32.72 | 5.73 | -243.84 | -4.38 |
| Yambol | 67.44 | 230.46 | 29.26 | -2.71 | -130.07 | -47.11 |

The regional structure of the museum sector in Bulgaria is characterized by critically high volatility (CV > 40%) in all three segments, indicating a lack of sustainable strategies for a loyal audience and an excessive dependence on conjunctural factors. The data reveal a structural mismatch between scale and sustainability.

The districts with the highest absolute attendance (Leaders) exhibit greater vulnerability and diminished adaptability to external shocks. Conversely, the Mid-level segment demonstrates superior recovery resilience and more consistent long-term growth. The study concludes that crisis management capacity in cultural tourism is not a function of visitor volume alone, but is contingent upon flexible local policies and the diversification of the consumer profile.

The present study, although objective in its statistical scope, is characterized by a methodological limitation that warrants consideration when interpreting the findings when interpreting the results. The calculated high overall variation within the clusters is the result not only of temporal fluctuations but also of significant differences in the scale of the districts within the groups themselves. This limits the possibility of deriving "average profile" for a given cluster without considering its internal (spatial) structure. The research results and the identified structural weaknesses of regional museum networks necessitate a rethinking of cultural policies in Bulgaria.

To overcome persistent instability and enhance the resilience of the sector, the following recommendations can be derived:

1. Transition from Accidental to Loyal Audiences (Audience Development) – In connection with the persistently high coefficient of variation, museums should make efforts to shift their focus from primarily serving accidental tourists toward actively building relationships with local communities, tourism intermediaries, and tourist sites. This requires long-term programs for working with target groups – year-round educational formats, membership programs, and the transformation of museums into active social spaces for the local population.
2. Enrichment of the Cultural Product and Overcoming the "Center-Periphery" Model – To overcome the lag of the low-level districts (Q4), the creation of integrated tourism products is necessary. The example of Smolyan shows that peripheral districts can achieve rapid recovery by combining cultural-historical heritage with other forms of tourism (ecological, rural, and culinary). This necessitates a strengthened local-level partnership and the development of shared routes to distribute visitors more evenly across the regions. In this way, over-tourism in certain regions will also be avoided.
3. Integrating event tourism into a year-round strategy – Destinations whose attendance is primarily linked to major events, such as is the case in the Pernik district, require mechanisms to capitalize on this concentrated flow. Management strategies must seek ways to sustain visitor interest beyond the festival days by organizing visiting exhibitions, digitizing archives, and hosting accompanying events to balance attendance throughout the year.
4. Linking funding to real results – The established "paradox of scale", where better flexibility is observed in medium-sized versus large museum sites, shows that the model for distributing public funds is in need of an update. The system of state and municipal subsidies should account for sustainability indicators such as long-term growth (CAGR) and the recovery index. In this way, institutional initiative, the updating of exhibitions, and actual audience attraction will be encouraged, rather than just the passive maintenance of infrastructure.

The practical application of these measures requires a shift away from the current extensive model of cultural policy. Linking support to institutional flexibility, rather than to the servicing of accidental tourist groups and individual visitors, is a fundamental prerequisite for overcoming regional disproportions and ensuring the stability of the sector.

## CONCLUSION

The multidimensional analysis of museum activity in Bulgaria for the period 2012–2024 reveals critical insights into the resilience and structural deficits of the cultural sector in the country. The research period includes economic upswings and global crises, revealing deep patterns that go beyond statistical parameters.

From the analysis of the results, it is established that the museum network in Bulgaria has an established persistent instability that encompasses almost all observed groups. These data reflect serious gaps in building a loyal audience. Since regional museums rely primarily on accidental tourist flows and one-off events, they remain highly vulnerable and fail to mitigate the effects of external crises. Furthermore, the data highlights a "paradox of scale": high visitor numbers do not inherently guarantee institutional success. Interestingly, districts with moderate attendance tend to recover more swiftly and effectively from crises than traditional market leaders. The results suggest that districts with medium attendance recover much faster and more effectively from aftershocks compared to traditional leaders.

While leading destinations manifest inertia, relying mainly on routine tourist interest, the middle segment manages to adapt much more successfully by offering a specific local product.

The high structural volatility of the sector is a clear indicator that the current growth model has been exhausted. The conclusions confirm the need for a fundamental review of regional cultural policies and a transition toward strategies based on resilience rather than statistical volume. The future development of museum institutions depends on their ability to transform their activities from the passive preservation of artefacts to active visitor management.

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