

The publication of the European Journal of Geography (EJG) is based on the European Association of Geographers' goal to make European Geography a worldwide reference and standard. Thus, the scope of the EJG is to publish original and innovative papers that will substantially improve, in a theoretical, conceptual, or empirical way the quality of research, learning, teaching, and applying geography, as well as in promoting the significance of geography as a discipline. Submissions are encouraged to have a European dimension. The European Journal of Geography is a peer-reviewed open access journal and is published quarterly.

Received: 16/05/2026

Revised: 19/08/2026

Accepted: 19/09/2026

Published: 21/09/2026

Editor:

Dr Alexandros Bartzokas-Tsiompras

DOI: 10.48088/ejg.a.avd.17.1.337.357

ISSN: 1792-1341

E-ISSN: 2410-7433



Copyright: © 2026 by the authors.

Licensee European Association of Geographers (EUROGEO). This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license.



Research Article

Structural and Perceived Border Effects in Bosnia and Herzegovina's Borderlands

Aida Avdić Marić ¹✉

¹ Independent Researcher, Sarajevo, Bosnia and Herzegovina

✉ Correspondence: avdic.aida@yahoo.com

Abstract: This paper examines the internal heterogeneity of Bosnia and Herzegovina's borderlands by relating demographic and socio-economic differences across border sectors to residents' perceptions of the state border. The study combines municipality-level official statistics with a case-based survey in six border municipalities. Eight composite indices were used to assess structural variation, followed by non-parametric comparisons. The results show that the borderlands do not form a uniform belt of disadvantage. After correction for multiple testing, sectoral differences remain significant for vitality, educational attainment and economic vitality, while the EU-facing/non-EU-facing distinction explains only part of the observed variation. Survey findings show that perceptions of development and border opportunity do not correspond directly with structural position. More frequent cross-border mobility is associated with more positive perceptions of the border's economic role and stronger perceived cultural proximity, while identity patterns remain strongly place-specific.

Keywords: borderlands; Bosnia and Herzegovina; border effects; territorial heterogeneity; local perceptions

Highlights:

- Bosnia and Herzegovina's borderlands do not form a uniform peripheral belt.
- Structural borderland conditions do not consistently correspond with residents' perceptions and everyday experiences of the border.
- Frequent cross-border mobility is associated with stronger perceptions of border opportunity.

1. Introduction

Border regions have long been an important subject of geographical research, evolving from being conceptualised primarily as peripheral and marginal areas to being understood as dynamic zones of interaction, negotiation and everyday practice (Brambilla, 2015; Newman, 2006; Paasi, 1996; Wilson & Donnan, 2012). Contemporary borderlands studies emphasise that borders are not merely fixed political lines, but socially produced and context-dependent regimes whose effects vary across space and scale (van Houtum, 2011; Yuval-Davis et al., 2019). Borderlands are therefore rarely homogeneous even within a single national context and different border segments may generate distinct socio-economic trajectories and lived experiences shaped by historical legacies, institutional arrangements and cross-border relations (Durand, 2015; van Houtum & van der Velde, 2004; Wastl-Walter, 2011; Wille, 2024).

Bosnia and Herzegovina represents a particularly complex and analytically rich borderland context because of its decentralised post-conflict governance, fragmented internal administrative structure and spatially diverse international boundary (A. Avdić, 2025). Croatia's accession to the European Union and the Schengen Area has added an external EU border regime to parts of this boundary (Leutloff-Grandits, 2023), while the borders with Serbia and Montenegro remain embedded in non-EU cross-border regimes. Despite these differences, Bosnia and Herzegovina's border regions are

often approached as a relatively uniform category framed through peripherality or structural disadvantage (A. Avdić et al., 2022). Previous studies have demonstrated the existence of socio-economic and demographic challenges in border municipalities (A. Avdić & Avdić, 2023; A. Avdić et al., 2022) but less attention has been paid to their internal heterogeneity and to differences between individual border sectors (A. Avdić, 2025).

A related gap concerns the relationship between measured structural conditions and how borders are perceived and experienced locally. Socio-economic indicators alone cannot fully capture the lived realities of border regions (Kolossoff & Scott, 2013). In some settings the border strongly influences everyday life, while in others it may become normalised, or selectively relevant through mobility, employment or cross-border exchange (Anderson & O'Dowd, 1999; Paasi, 2011; van Houtum, 2000). Examining whether structural differences across border sectors correspond with local perceptions is therefore important for understanding how border effects vary within the country.

The scope of the study is limited to the structural, functional and perceptual dimensions of border effects examined through territorial indicators and residents' experiences; institutional, security and historical dimensions of Bosnia and Herzegovina's post-Dayton borders are not addressed in the present analysis. Border effects are understood here as the differentiated structural, functional and perceptual consequences associated with the presence and operation of a state border within particular local and regional contexts. Structural effects refer to differences in demographic and socio-economic conditions that may characterise border territories, including population dynamics, age structure, educational attainment, labour-market conditions, income and economic vitality. Functional effects concern cross-border interaction, particularly mobility, economic exchange, cooperation and access to opportunities, while perceptual effects refer to how residents interpret the border and its significance for local development, opportunity, regional identity and cultural proximity. These dimensions may overlap; structural disadvantage may coexist with the border functioning as a resource, while more favourable structural conditions do not necessarily produce stronger cross-border interaction or more positive perceptions. Border effects are therefore treated as multidimensional and context-dependent rather than as uniform outcomes of border location.

Taking these differences as a starting point, the study is guided by the following research questions: (RQ1) How do demographic and socio-economic conditions differ between border and non-border municipalities and across the five border sectors? (RQ2) How do residents' perceptions of local development and of the border as an opportunity relate to these structural conditions? (RQ3) How do cross-border mobility, regional identity, and perceived cultural proximity vary across the selected border municipalities?

2. Theoretical Background

Borderlands scholarship has increasingly shifted from treating borders as fixed territorial demarcations towards understanding them as socio-spatial institutions produced through practices, discourses and governance arrangements. Borders are therefore approached as multi-scalar phenomena that regulate movement while also shaping regional governance and everyday social life (Kolossoff & Scott, 2013; Newman, 2006; Paasi, 2011; Scott, 2020; Ünay & Alagöz, 2026). This shift is closely related to the distinction between borders as territorial lines and bordering as a broader set of ordering practices. Van Houtum and van Naerssen's (2002) formulation of bordering, ordering and othering shows how borders structure mobility, belonging, differentiation and exclusion beyond the boundary line itself. More recent work further emphasises the relational and context-dependent nature of borders and their effects (Wille, 2022, 2024).

Borderlands are frequently associated with peripherality, although peripheral location does not necessarily imply marginality (Oppido et al., 2023; Więckowski, 2025). Whereas peripherality may coexist with functional integration into wider spatial systems, marginality involves deeper exclusion from economic, social or institutional processes (A. Avdić, 2025; Leimgruber, 2004; Oppido et al., 2023). In border regions, demographic decline or limited services may coexist with cross-border livelihoods, informal exchange, kinship ties or cultural proximity (Máliková et al., 2016; Marić & Avdić, 2023). Border regions may therefore display internally differentiated profiles depending on border permeability, cross-border interaction and the wider governance environment (Perkmann, 2003; Sohn, 2014). Evidence from the Neisse-Nisa-Nysa Euroregion likewise shows that mobility and cooperation remain sensitive to changes in border regimes and institutional conditions (Böhm et al., 2024). Borders may thus operate simultaneously as barriers, filters, resources and opportunities, with their territorial effects varying across contexts (Brambilla, 2015; Newman, 2006).

The concept of borderscapes similarly shifts attention from the boundary line to the wider spatial field in which borders are experienced and negotiated (Brambilla, 2015; van Houtum & Eker, 2016). This perspective is particularly relevant here because structural indicators alone cannot capture how residents experience the border in daily life. A

related focus on everyday bordering draws attention to mobility practices and routine forms of inclusion or exclusion through which the border may become normalised in some contexts and highly salient in others (Brambilla & Jones, 2020; Yuval-Davis et al., 2019).

In Bosnia and Herzegovina, this relational understanding is further shaped by the interaction between regional and ethnic belonging, as perceptions of historically rooted regions may vary across different social, ethnic and political-geographical contexts (Botić & Grebenar, 2021). Research from other multiethnic East-Central European borderlands also shows how local identities and perceptions of otherness are negotiated through everyday encounters (Crețan et al., 2023). Recent work on border temporalities adds that borders organise not only space but also movement and unequal access to circulation (Venken et al., 2026). Different border segments may therefore be associated with different patterns of mobility and connectivity depending on institutional arrangements and intensity of cross-border interaction.

These perspectives support a distinction between measured structural conditions and the ways in which borders are perceived and used locally. The two may overlap, but they need not coincide, particularly where mobility, informal economic networks or identity-based attachments remain only partly visible in aggregate data (Fuerst-Bjeliš & Vukosav, 2019). Spatial vicinity may also foster cross-border cultural proximity, although such relations remain sensitive to wider political and bilateral contexts (Berceanu et al., 2023). Following this approach, the analysis combines municipality-level structural indicators with survey evidence on mobility, opportunity and identity, linking broader structural conditions with everyday border experiences (Schönwald et al., 2022).

3. Spatial scope of the study

Bosnia and Herzegovina comprises 143 local government units, which represent the basic spatial units considered in this study (Figure 1). The statistical analysis includes 142 units, as the municipality of Stanari was excluded because it was established after the 2013 Census and therefore lacks a comparable 2013 baseline for several indicators used in the composite indices. The country's fragmented and asymmetrical administrative structure, comprising two entities (the Federation of Bosnia and Herzegovina and Republika Srpska) and the self-governing Brčko District, provides an important interpretative context for understanding borderland differentiation (Figure 1).

In legal terms, Bosnia and Herzegovina's border area is not defined uniformly. The Law on Border Control defines a border belt extending 10 km inland from the state border (Zakon o graničnoj kontroli, 2025), while the Agreement between Bosnia and Herzegovina and Croatia on Border Traffic defines a narrower border zone of 5 km from the common border (Sporazum između Bosne i Hercegovine i Republike Hrvatske o pograničnom prometu, 2013). For analytical purposes, this study defines the borderland administratively as municipalities and cities that physically touch the state border. This definition includes 37 border municipalities/cities: 26 along the border with Croatia, six along the border with Serbia and five along the border with Montenegro (Figure 1).

Because the border with Croatia is the largest and most territorially diverse segment, it is subdivided into western ($n = 5$), northern ($n = 12$) and southern ($n = 9$) sectors. Municipalities along the borders with Serbia and Montenegro form two additional sectors: the Serbia-facing sector ($n = 6$) and the Montenegro-facing sector ($n = 5$) (Figure 1). The classification considers geographical position, physical-geographical characteristics, administrative structures and historical-cultural linkages. Physical geography adds another layer to this sectoral diversity. Along the Croatian border, the landscape ranges from karst poljes, plateaus and pronounced Dinaric relief to river valleys and hilly terrain in the west and the lowland Sava corridor in the north. Along the eastern border, the lower Drina lowlands transition into more mountainous terrain upstream, while the border with Montenegro forms the most mountainous part of the state boundary. These contrasts provide an important context for differences in accessibility, settlement patterns and cross-border connections.

Ethnic composition was not used as a formal criterion for sector delimitation, but it provides an important contextual layer. The western sector along the Croatian border is predominantly Bosniak, the northern sector is ethnically more mixed, and the southern sector is predominantly Croat, with Bosansko Grahovo as a notable Serb-majority exception; the Serbia-facing and Montenegro-facing sectors are predominantly Serb, although the former also includes municipalities with substantial Bosniak populations. Bosansko Grahovo was retained in the southern Croatian sector as a transitional case, with its administrative affiliation with Canton 10 considered alongside the physical-geographical and border-orientation criteria used in the sectoral classification.

Some municipalities, such as Bijeljina, Čajniče and Trebinje, are located near interstate tripoints and thus have limited contact with more than one neighbouring country. In such cases, classification follows the dominant border orientation, based on the length of the relevant border segment and the position of the main border crossings. This sectoral perspective provides a more nuanced view of Bosnia and Herzegovina's borderlands and highlights their internal diversity beyond the basic border/non-border distinction.

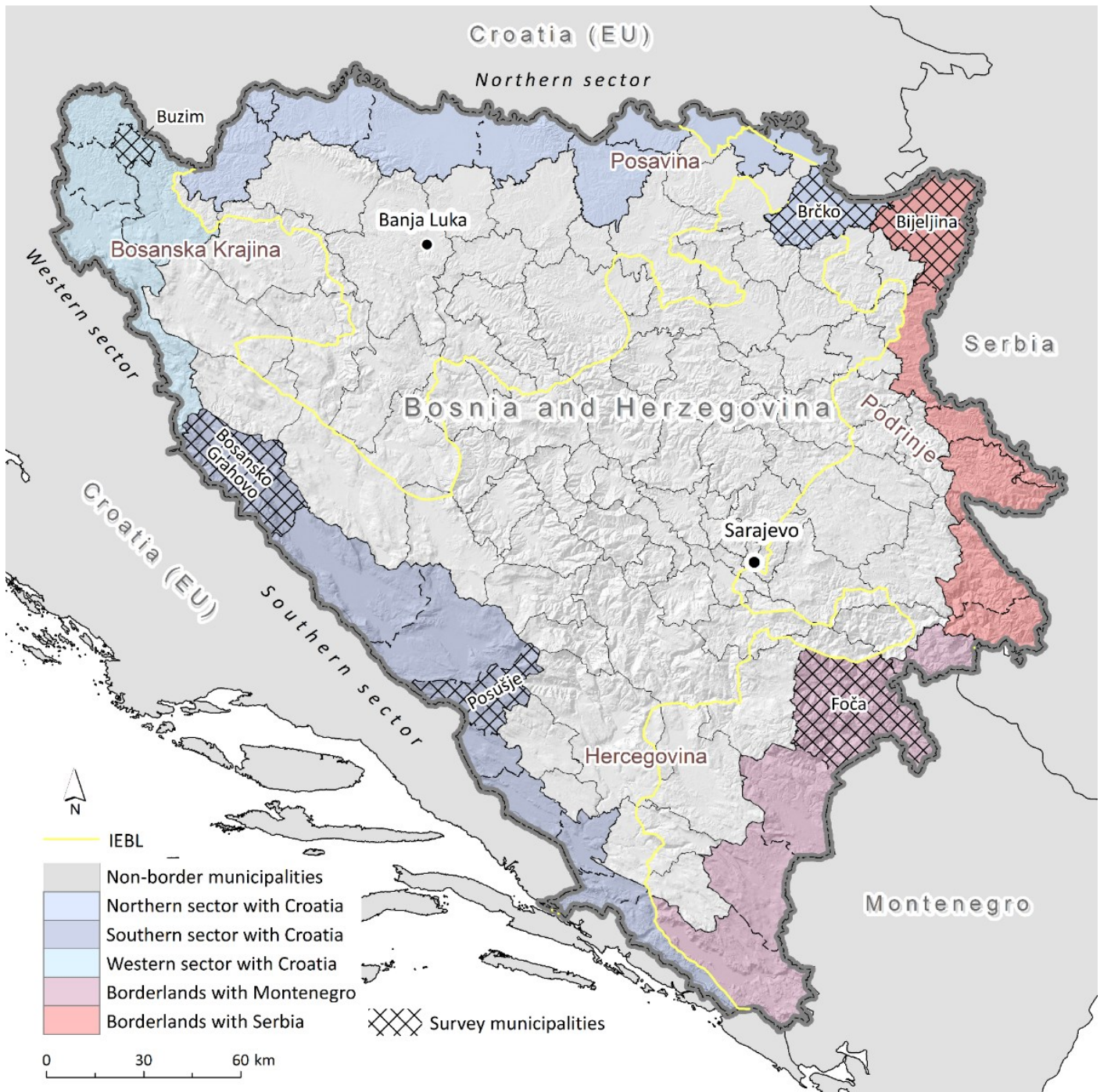


Figure 1. Spatial scope of the study. Source: Adapted from A. Avdić (2025) Note: IEBL = Inter-Entity Boundary Line.

4. Materials and Methods

The methodology combines two complementary quantitative components. Municipality-level official statistics are used to construct composite socio-demographic indices and examine the structural dimension of border effects, while a case-based survey in selected border municipalities examines their functional and perceptual dimensions through

border-related opportunities, mobility, regional identity and cultural proximity. This design connects standardised municipality-level patterns with locally grounded perceptions, while its main limitations arise from differences in the temporal and institutional context of the official data and from the case-based survey design, which does not support population-level generalisation. The overall analytical framework and the relationship between these two components are summarised in Figure 2.

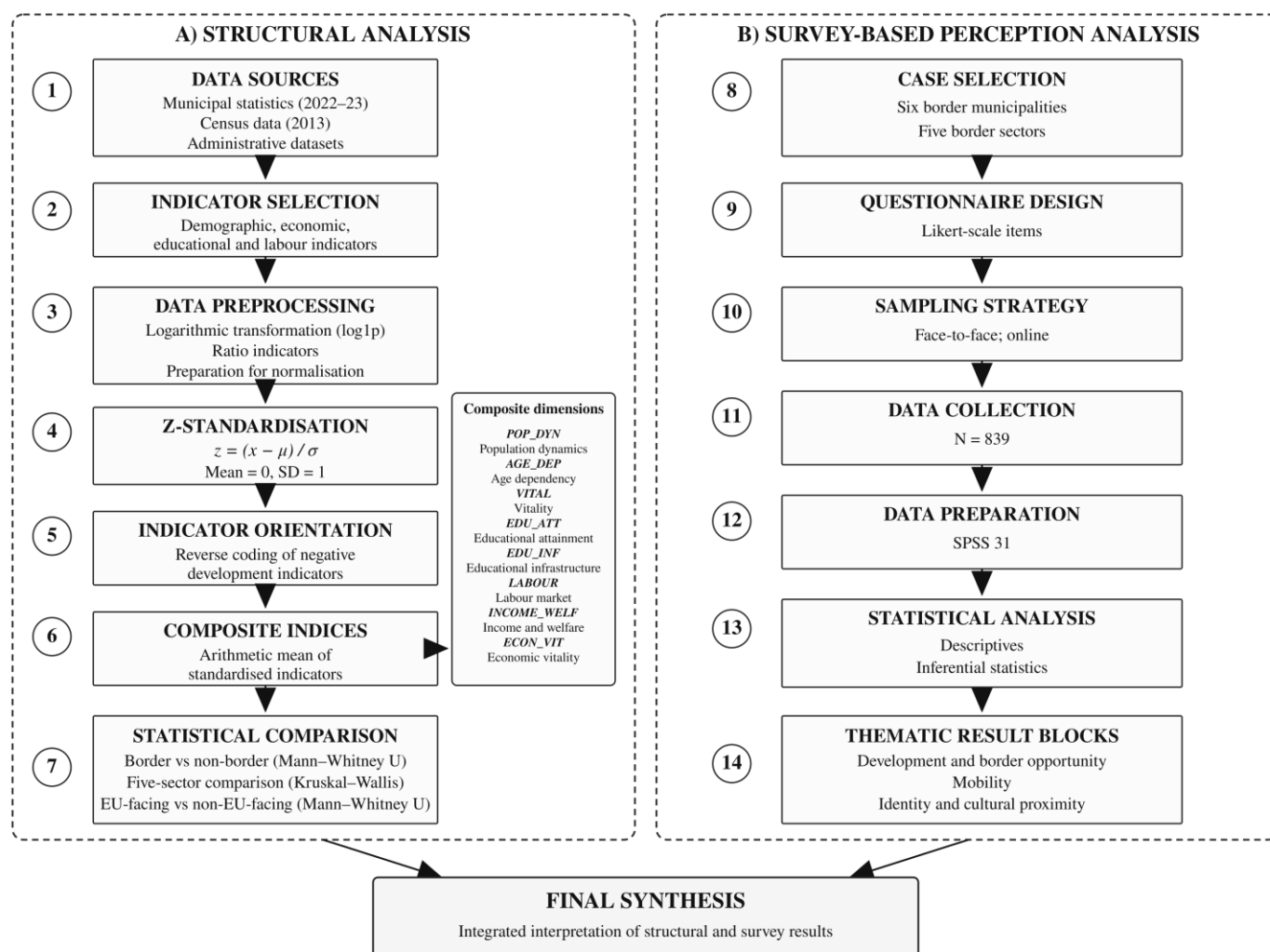


Figure 2. Integrated methodological framework combining composite index modelling and perception analysis. Source: Authors' elaboration; visual design supported by Lucidchart and ChatGPT (OpenAI)

4.1. Official statistical data and composite indices

The official statistical analysis is based on municipality-level demographic and socio-economic data, combining administrative statistics mainly from 2022–2023 with indicators from the 2013 Population Census, the latest available census in Bosnia and Herzegovina. Data were compiled from entity statistical publications, municipal bulletins, census tables and municipality-level census summaries.

Eight dimension-specific composite indices were calculated as arithmetic means of their constituent indicators: population dynamics, age dependency, vitality, educational attainment, educational infrastructure, labour market conditions, income and welfare and economic vitality. Prior to aggregation, indicators were aligned to a common municipal framework and screened for redundancy using pairwise Pearson correlations. The strongest within-index association was between the share aged 65+ and the age dependency ratio ($r = .882$), while all remaining correlations were $|r| \leq .798$. The indicator set was retained because selection was theory-driven and the correlated measures represented related but conceptually distinct dimensions. Indicators were z-standardised; selected highly skewed variables were

transformed using log1p and reverse coding was applied where higher values represented less favourable conditions. The complete composition of the indices is provided in Appendix B (Table B1). Statistical analysis proceeded in two stages. Border and non-border municipalities were first compared using the Mann–Whitney U test. Internal differentiation among five border sectors was then examined using the Kruskal–Wallis H test, followed, where appropriate, by Dunn’s pairwise comparisons with Bonferroni adjustment. Holm-adjusted p-values were calculated separately across the eight composite indices for the border/non-border, five-sector and EU-facing/non-EU-facing comparisons. Given the small and unequal number of municipalities across sectors, statistical power for detecting subtler differences is limited, particularly in the post hoc pairwise comparisons.

4.2. Survey design and case selection

To complement the structural analysis, a case-based survey was conducted to examine locally grounded perceptions of development, border opportunity, mobility and identity. It was not designed to provide statistically representative estimates for the entire borderland population of Bosnia and Herzegovina.

Six municipalities were selected according to demographic characteristics, the level of marginalisation measured by the previously constructed GMAR index (A. Avdić, 2025; Marić & Avdić, 2023), sectoral affiliation and specific borderland characteristics. One municipality was selected from each border sector, while the southern sector along the Croatian border was represented by two contrasting cases to capture its internal heterogeneity. The final cases were Bužim, Brčko, Bosansko Grahovo, Posušje, Bijeljina and Foča. The selected municipalities represent markedly different borderland contexts. Brčko reflects a unique political-geographical and administrative setting as a self-governing district, while Bijeljina represents the demographically and economically strongest case along the border with Serbia. Bosansko Grahovo was selected as the most marginalised border municipality, with Posušje providing a more favourable demographic and entrepreneurial contrast within the same southern sector along the Croatian border. Foča represents a post-conflict and territorially fragmented setting along the border with Montenegro, while Bužim combines demographic vitality with a pronounced regional identity.

A separate single-case study has examined Bosansko Grahovo’s marginalisation in greater depth using part of the same broader survey dataset together with additional interviews and spatial indicators (Avdić Marić et al., 2026). In the present study, these responses are used only within the comparative six-municipality framework.

4.3. Survey sample

After data screening, seven incomplete questionnaires were excluded, resulting in a final analytical sample of 839 respondents across the six municipalities (Table 1). Given the purposive case-based design, the sample is used for comparative interpretation rather than population-level generalisation. Data were collected using a mixed-mode approach combining face-to-face and online administration.

The pooled sample was concentrated in the 25–49 age group (64.5%) and was comparatively highly educated, with 61.5% reporting tertiary education; 70.1% were employed full-time. Ethnic affiliation also varied substantially across the cases: 49.1% of respondents identified as Serb, 34.4% as Bosniak and 13.7% as Croat, while 2.7% identified otherwise or did not declare an affiliation. The Bužim and Posušje samples were almost entirely Bosniak and Croat, respectively, while Serb respondents predominated in Bosansko Grahovo, Bijeljina and Foča; Brčko included respondents from all three constituent ethnic groups, although Bosniaks were the largest group in the sample. Because ethnic affiliation is strongly spatially concentrated in several of the selected municipalities and the survey was not stratified by ethnicity, it is treated here as a contextual characteristic rather than as an independent explanatory variable. Given the particular importance of ethnic geography in Bosnia and Herzegovina, this represents an important direction for further research.

4.4. Survey instrument

The questionnaire was originally developed as part of the author’s doctoral research on Bosnia and Herzegovina’s borderlands (A. Avdić, 2025). For this study, selected items were organised into three thematic groups: perceived development and border opportunity; cross-border mobility and reasons for crossing; and regional identity and perceived cultural similarity within Bosnia and Herzegovina and across the border. Most attitudinal items were measured on five-point Likert-type scales and are descriptively presented using medians and interquartile ranges. Selected identity items

were additionally recoded into three categories (disagree, neutral, agree) for cross-tabulation between municipalities. The selected questionnaire items used in the present analysis are reproduced in Appendix A.

Table 1. Survey sample distribution and population size by municipality and border sector

Municipality	Border sector	Border orientation	Population aged 18+ (2013 Census)	Main ethnic composition (2013 Census)	Number of respondents
Bužim	Sector 1	Western sector along the border with Croatia	13,914	Bosniak majority (99.3%)	71
Brčko	Sector 2	Northern sector along the border with Croatia	67,018	Bosniak 42.4%, Serb 34.6%, Croat 20.7%	201
Bosansko Grahovo	Sector 3	Southern sector along the border with Croatia	2,236	Serb 82.8%, Croat 16.0%	44
Posušje	Sector 3	Southern sector along the border with Croatia	15,406	Croat majority (99.7%)	98
Bijeljina	Sector 4	Eastern sector along the border with Serbia	88,027	Serb 85.2%, Bosniak 12.2%	276
Foča RS	Sector 5	Southeastern sector along the border with Montenegro	15,419	Serb 91.5%, Bosniak 6.9%	149
Total	/	/	202,020		839

Source: Population aged 18+ and municipality-level ethnic composition are derived from the 2013 Census (Agency for Statistics of Bosnia and Herzegovina, 2016); respondent counts are based on the authors' survey.

Note: Ethnic composition refers to the municipality-level population according to the 2013 Census and does not represent the ethnic composition of the survey sample.

4.5. Ethics and informed consent

The survey involved adult participants and was conducted on an anonymous and voluntary basis. Participants were informed about the purpose of the study, the anonymous treatment of their responses and their right to decline participation. Informed consent was obtained verbally or through participants' agreement to complete the anonymous questionnaire after being informed about the study. No personally identifying information was collected or reported. No formal ethics committee approval was obtained for this study.

5. Results

The comparison between border (N = 37) and non-border municipalities (N = 105) shows a mixed profile across the eight composite indices. At the unadjusted level, differences are observed in educational attainment ($p = .023$), labour market conditions ($p = .044$) and income and welfare ($p = .030$), while educational infrastructure approaches the conventional significance threshold ($p = .053$). However, none of these differences remains statistically significant after Holm correction for the eight index-level comparisons. This reinforces the limited explanatory value of a simple border/non-border distinction and supports a closer examination of internal heterogeneity within the borderlands.

5.1. Structural heterogeneity of the border sectors

To examine internal borderland heterogeneity, the 37 border municipalities were compared across the five analytical sectors defined in Section 3. These sectors partly overlap with, but do not coincide with, Bosnia and Herzegovina's historically and geographically shaped vernacular regions. Bosanska Krajina is represented mainly in the western and partly in the northern sector along the Croatian border, Posavina predominantly in the northern sector, Podrinje primarily in the Serbia-facing sector, while Herzegovina is most strongly represented in the southern sector along the Croatian border and parts of the Montenegro-facing sector.

Sectoral median values indicate clear internal differentiation (Table 2). The southern sector along the Croatian border (Sector 3) records relatively higher values in population dynamics, educational attainment and economic vitality, indicating comparatively more favourable conditions within the borderland context. In contrast, the Serbia-facing sector (Sector 4) records the lowest values in several dimensions, including population dynamics, income and welfare and economic vitality.

The western sector along the border with Croatia (Sector 1) is characterised by a relatively favourable age structure and vitality, but lacks similarly strong educational or economic indicators, pointing to partial demographic advantages without broader structural support. In comparison, the northern sector along the Croatian border (Sector 2) and the Montenegro-facing sector (Sector 5) display more heterogeneous patterns (Table 2). Sector 2 combines weaker demographic and economic indicators with relatively better labour-market values, while Sector 5 shows somewhat higher educational attainment alongside weaker labour outcomes and modest demographic performance. Taken together, these patterns suggest that border areas, depending on the dimension observed, can in some cases show more favourable values compared to the rest of the country, while at the same time revealing clear internal differences shaped by varying local conditions.

Table 2. Median values of composite indices across border sectors

Composite index	Sector 1	Sector 2	Sector 3	Sector 4	Sector 5
POP_DYN	-0.09	-0.41	0.74	-0.55	-0.25
AGE_DEP	1.10	-0.15	0.03	0.11	0.04
VITAL	0.64	-0.57	-0.07	0.10	0.04
EDU_ATT	-0.30	-0.09	0.76	-0.19	0.44
EDU_INF	-0.04	-0.17	-0.10	-0.25	-0.14
LABOUR	0.18	0.29	0.22	-0.16	-0.56
INCOME_WELF	0.28	-0.29	-0.20	-0.83	-0.01
ECON_VIT	-0.12	-0.61	0.56	-0.77	-0.42

Note: Values are sector medians of composite index scores calculated from z-standardised indicators. Higher scores indicate more favourable conditions; indicators for which higher raw values represent less favourable conditions were reverse-coded before aggregation.

The Kruskal–Wallis results show that sectoral heterogeneity is not equally expressed across all dimensions (Table 3). After correction for multiple testing, significant differences are concentrated in vitality, educational attainment and economic vitality.

After Holm correction, significant sectoral differences remain for vitality ($H = 14.196$, adjusted $p = .047$), educational attainment ($H = 13.769$, adjusted $p = .048$) and economic vitality ($H = 19.891$, adjusted $p = .004$). Population dynamics and age dependency show differences at the unadjusted level ($p = .019$ for both), but these do not remain significant after correction. No significant sectoral differences are found for labour market conditions, income and welfare, or educational infrastructure. The post hoc comparisons for the three significant dimensions are presented in Appendix B (Table B2).

Post hoc comparisons show that these differences are limited to a small number of sectoral contrasts (Appendix B, Table B2). Sector 3 records higher educational attainment and economic vitality than Sector 2 and Serbia-facing Sector

4, while Sector 1 records higher vitality than Sector 2. These patterns suggest that internal borderland heterogeneity is selective across development dimensions.

To examine whether part of this variation reflects a broader border-regime distinction, the Croatian sectors were grouped as EU-facing and the Serbian and Montenegrin sectors as non-EU-facing. After Holm correction, only economic vitality remains significantly higher in EU-facing border municipalities (Holm-adjusted $p = .022$). The difference in labour market conditions observed at the unadjusted level ($p = .024$) does not remain significant after correction (Holm-adjusted $p = .167$) and no corrected differences are found for the remaining indices (Appendix B, Table B3). This suggests that proximity to the EU border alone provides only a limited explanation of structural differences across the borderlands.

Overall, the composite-index analysis points more clearly to selective internal sectoral heterogeneity than to a simple EU-facing/non-EU-facing divide. The next part of the analysis turns to the case-based survey to examine how these broader structural patterns relate to local perceptions and experiences of the border.

Table 3. Sectoral heterogeneity across composite indices (Kruskal–Wallis test)

Index	H (df = 4)	p-value	Holm-adjusted p-value
Population dynamics	11.758	.019	.096
Age dependency	11.731	.019	.096
Vital index	14.196	.007	.047
Educational attainment	13.769	.008	.048
Labour market	6.499	.165	.330
Income & welfare	8.223	.084	.251
Economic vitality	19.891	< .001	.004
Educational infrastructure	0.780	.941	.941

Note: Holm-adjusted p-values were calculated across the eight composite indices to control for multiple testing. Adjusted p-values below .05 are shown in bold.

5.2. Perceived development and border opportunity

The survey complements the structural analysis by examining how development and border-related opportunities are perceived across the six selected municipalities. Rather than providing statistically generalisable estimates for the entire borderland population, it serves as an interpretive tool for understanding how development, border opportunity, mobility and identity are experienced across different local border settings.

The first survey block examines how respondents evaluate the development of their municipality and how strongly they associate local opportunities with the border. This distinction is analytically important because it captures both perceptions of local conditions and the extent to which the border itself is seen as relevant to those conditions. The survey therefore adds a dimension that official indicators cannot capture directly, showing how development is perceived locally and how the role of the border is understood across the six municipalities.

Perceptions of economic development vary clearly across the six municipalities (Table 4, Panel A). The strongest contrast occurs within the southern sector along the Croatian border, where Posušje is assessed far more positively than Bosansko Grahovo. Bijeljina is also evaluated relatively positively, Brčko occupies an intermediate position, while Foča and Bužim receive more critical assessments. These differences indicate substantial inter-municipality variation that only partly corresponds with the structural patterns identified through the composite indices.

A similarly differentiated pattern appears in perceptions of the border as an opportunity (Table 4, Panel B). More positive assessments are concentrated above all in relation to the economy, transport and tourism, particularly in Posušje and Bijeljina. Foča also stands out in the case of tourism, despite its less favourable overall development assessment. By contrast, the perceived effects of the border on agriculture and industry remain more moderate, while its role in population change is generally assessed in neutral terms. This may indicate that respondents more readily associate

the border with concrete functional domains linked to circulation, exchange and service activity than with broader demographic processes, which are likely shaped by a wider set of structural factors.

Cross-border cooperation adds a further layer of differentiation (Table 4, Panel C). It receives the most positive assessments in Posušje and Bijeljina, while Bužim records the lowest values. Here again, the responses do not suggest a simple correspondence between formal border position and perceived border opportunity. Although some of the variation may reflect broader sectoral settings, the results also show that municipalities sharing similar border orientations can differ substantially in how the border is evaluated, pointing to the relevance of specific local trajectories, institutional conditions, identity and everyday cross-border experience.

Overall, perceived development and border opportunity overlap only partially across the six cases, raising the question of whether these differences are more clearly reflected in everyday cross-border mobility.

Table 4. Local perceptions of development and border-related opportunities across surveyed municipalities

Item	Bužim (S1)	Brčko (S2)	B. Grahovo (S3)	Posušje (S3)	Bijeljina (S4)	Foča (S5)
Panel A. Local development						
Economic development	2 [1–2]	3 [2–3]	1 [1–2]	4 [3–4]	3 [3–4]	2 [2–3]
Panel B. Perceived border impact on selected domains						
Economy	3 [3–4]	3 [3–4]	3 [3–3]	4 [4–5]	4 [3–5]	3 [3–4]
Agriculture	3 [3–3]	3 [3–4]	3 [3–3]	3 [3–4]	4 [3–4]	3 [3–3]
Industry	3 [2.5–3]	3 [3–4]	3 [2.5–3]	4 [3–4]	3 [3–4]	3 [2–3]
Transport	3 [2–4]	3 [3–4]	3 [3–4]	4 [3–5]	4 [3–5]	3 [2–4]
Tourism	3 [3–4]	3 [3–4]	3 [3–4]	4 [4–5]	4 [3–5]	4 [3.5–5]
Panel C. Cooperation and population change						
Cross-border cooperation	2 [1–3]	3 [3–4]	3 [2–3]	4 [3–4]	4 [3–4]	3 [2–4]
Population change	2 [2–3]	3 [2.5–3]	3 [3–3]	3 [3–4]	3 [3–4]	3 [3–3]

Note: Values are presented as median and interquartile range (Q1–Q3) on a 1–5 scale. Higher values indicate more positive assessments.

5.3. Mobility

The second survey block examines cross-border mobility as an indicator of how strongly the border enters everyday local life. The responses show clear differences between the six case municipalities, suggesting that border position alone does not produce the same intensity or form of cross-border interaction. The most intensive mobility pattern is recorded in Posušje, where a large share of respondents report crossing the border at least monthly, including weekly and daily movement. At the other end of the spectrum, Bosansko Grahovo stands out as the least mobile case, with responses concentrated in the categories of rare or occasional crossing (Table 5). The remaining municipalities occupy intermediate positions, with border crossing most often reported several times per year rather than as a regular weekly practice. This points to marked inter-municipal variation in the practical importance of the border, including within the same broader sector.

Table 5. Frequency of border crossing across surveyed municipalities

Item	Bužim (S1)	Brčko (S2)	B. Grahovo (S3)	Posušje (S3)	Bijeljina (S4)	Foča (S5)
Frequency of border crossing	2 [2–2]	2 [2–2]	2 [1–2]	3 [3–4]	2 [2–3]	2 [2–3]

Note: Values are medians, with the first and third quartiles shown in brackets [Q1–Q3]. Responses were coded on a five-point ordinal scale: 1 = rarely or never, 2 = several times a year, 3 = at least once a month, 4 = at least once a week, and 5 = daily. Higher scores indicate more frequent border crossing.

Differences are also visible in the motives for crossing. In Posušje, mobility is most strongly linked to shopping and leisure, suggesting a highly functional use of the nearby border. In Bužim, family visits dominate more clearly, pointing to a socially anchored pattern of cross-border interaction. Brčko and Foča are more strongly associated with leisure-related mobility, while Bijeljina shows a broader mix of motives, with family visits remaining especially important. These patterns suggest that the border does not serve the same everyday function across localities, but is used variously as a space of consumption, social connection or occasional recreation.

A broader comparison between EU-facing and non-EU-facing cases suggests only limited differences. In both groups, occasional crossing several times per year remains the most common pattern, while leisure and family visits appear among the most frequent motives. Although EU-facing cases include a somewhat larger share of more regular mobility, the difference is not statistically significant. A clearer pattern emerges when mobility is related to the perceived economic role of the border. Respondents who cross more frequently tend to evaluate the border's economic effect more positively, while those who cross rarely or never are more often neutral or negative in their assessments. This relationship is also supported by a significant positive ordinal association between border-crossing frequency and the perceived economic impact of the border (Figure 3). The surveyed municipalities reveal different ways in which the border is incorporated into everyday practice. This makes mobility a useful bridge towards the next question, namely whether more frequent and functionally embedded cross-border interaction is also accompanied by stronger identity-related or cultural orientations towards the border.

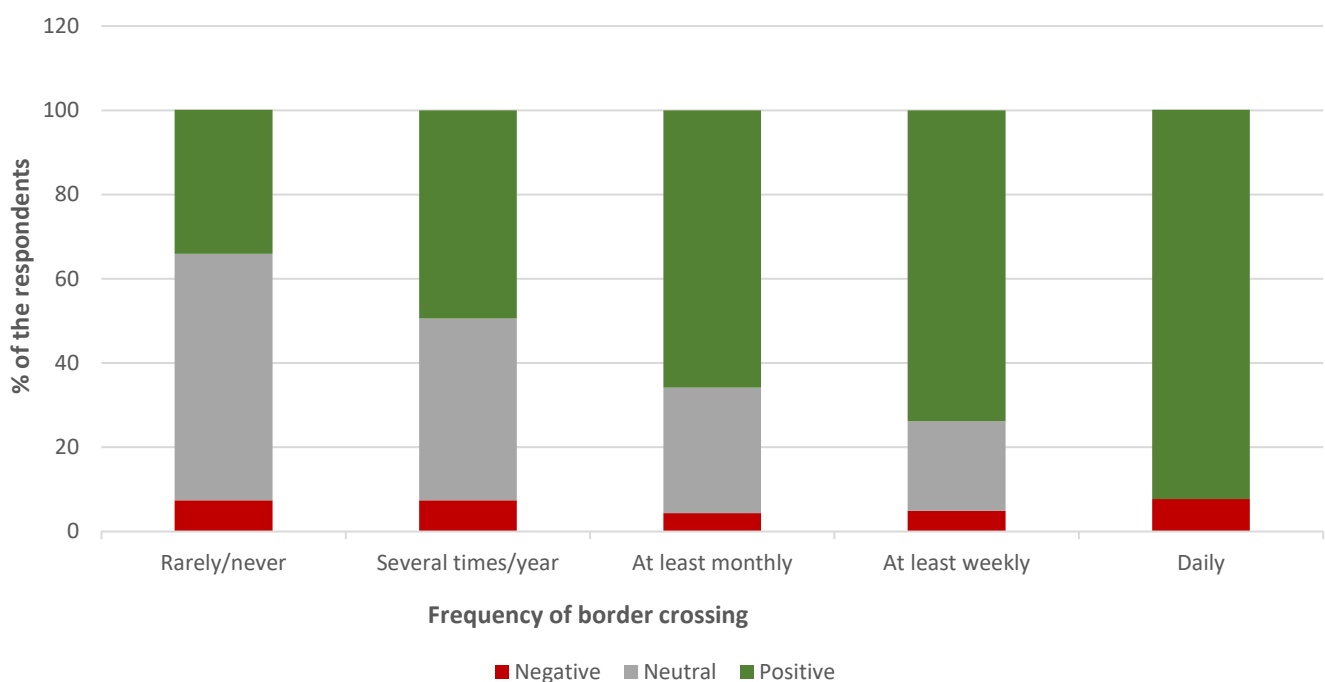


Figure 3. Perceived economic impact of the border by frequency of cross-border mobility. Bars show the share of respondents with negative, neutral, and positive evaluations of the border's economic effect.

5.4. Identity orientations and cultural proximity

The third survey block examines three identity-related dimensions: the perceived influence of the border on regional identity, cultural similarity with other parts of Bosnia and Herzegovina and cultural similarity across the border (Table 6).

Municipal differences were significant across all three identity-related measures, with the strongest association observed for cross-border cultural similarity (Table 6). The perceived influence of the border on regional identity is most pronounced in Bužim and Posušje, followed by Foča and Bijeljina, while Bosansko Grahovo records by far the weakest agreement.

A different pattern appears in perceptions of cultural similarity. Agreement that local culture is similar to that of other parts of Bosnia and Herzegovina is highest in Brčko, whereas Posušje and Bosansko Grahovo show substantially lower values. By contrast, cross-border cultural similarity is most strongly expressed in Posušje, Foča and Bijeljina, while Brčko and especially Bužim record much lower levels of agreement. Thus, perceived cultural similarity with other parts of Bosnia and Herzegovina and cross-border cultural proximity do not follow the same pattern. These contrasts point to several distinct local configurations. In Posušje, strong regional identity coincides with weak perceived cultural similarity with other parts of Bosnia and Herzegovina and very strong similarity across the border. Bužim shows almost the reverse pattern – regional identity is strong, but cross-border cultural similarity remains low. Bijeljina and Foča display more layered orientations, combining relatively strong internal and cross-border cultural alignment, while Brčko appears more mixed. Bosansko Grahovo stands out through weaker and less clearly articulated identity orientations overall.

Table 6. Agreement with identity-related statements across case municipalities (% within municipality)

Municipality	Regional identity	Internal cultural similarity (BiH)	Cross-border cultural similarity
Bijeljina	52.2	57.6	53.5
B. Grahovo	20.5	18.2	34.1
Brčko	45.7	60.8	30.2
Bužim	70.0	52.9	15.7
Foča	54.1	54.7	58.5
Posušje	66.3	23.7	72.9
<i>Pearson χ^2 (df = 10)</i>	47.932	66.940	131.090
<i>p</i>	< .001	< .001	< .001
<i>Cramér's V</i>	.170	.201	.282
<i>Valid N</i>	829	829	827

Note: Values represent the percentage of respondents within each municipality who selected Agree after recoding the original 5-point Likert scale into three categories (disagree, neutral, agree).

A further aspect of the analysis concerns the relationship between identity and cross-border mobility. Respondents who cross the border more frequently are more likely to perceive cultural similarity across the border, while the perceived influence of the border on regional identity also tends to increase, although less strongly. These associations are supported by positive and statistically significant Spearman correlations between border-crossing frequency and both regional identity ($p = .142$, $p < .001$) and cross-border cultural similarity ($p = .234$, $p < .001$), with the stronger relationship observed for the latter. What becomes visible here is a set of place-specific identity patterns in which regional attachment, belonging within Bosnia and Herzegovina and perceived cross-border closeness are combined in different ways. This suggests that identity-related border effects are shaped less by border location alone than by the specific social and experiential context in which the border is encountered.

6. Discussion

The findings show that Bosnia and Herzegovina's borderlands are not a coherent territorial periphery, but a differentiated set of border situations reflecting uneven demographic and developmental conditions and different forms of everyday cross-border interaction. This is evident in both the official-statistical analysis and the survey findings, which show that sectoral differences are selective and that perceptions of opportunity, mobility and identity do not always correspond with structural conditions.

This pattern is consistent with contemporary border studies, which emphasise the relational and processual character of borders and the uneven ways in which border effects emerge through governance, mobility, history and everyday practice (Walther et al., 2023; Wille, 2024, 2025). In Bosnia and Herzegovina, these processes are further conditioned by a post-conflict state structure marked by territorial fragmentation and institutional asymmetry (B. Avdić et

al., 2022; Klemenčić, 2000). The same international boundary is therefore mediated through different administrative settings, regional trajectories, development conditions and identity formations (A. Avdić, 2025; Jansen, 2023).

The structural results show that border status alone is insufficient to account for territorial disadvantage. Although some border/non-border differences appear at the unadjusted level, none remains statistically significant after correction for multiple testing. These findings build on earlier studies that identified internal heterogeneity within Bosnia and Herzegovina's borderlands (A. Avdić, 2025; A. Avdić et al., 2022) by providing a more differentiated empirical account of structural variation across border sectors. This interpretation is consistent with conceptual approaches that understand borders as context-dependent phenomena whose functions may include barriers, filters, interfaces and resources (Prokkola, 2008). Sectoral differences provide a more differentiated picture. After correction for multiple testing, sectoral differences remain significant for vitality, educational attainment and economic vitality, while population dynamics and age dependency no longer meet the adjusted significance threshold, indicating that the most robust internal contrasts concern demographic vitality, human capital and local economic capacity.

Some sectors remain geographically peripheral while retaining elements of demographic resilience or functional connection, whereas others display a more consolidated form of marginality associated with demographic fragility and weak development capacity (Marić & Avdić, 2023). The western sector along the Croatian border, for example, combines relatively favourable age structure and vitality with weaker economic transformation (Vlada Unsko-sanskog kantona, 2021). The Serbia-facing sector shows a less favourable structural profile, including weak population dynamics, income and welfare, and economic vitality, resembling patterns identified in studies of Serbia's own border regions (Anđelković-Stoilković, 2019; Anđelković-Stoilković et al., 2018). By contrast, the southern sector along the Croatian border performs relatively well in educational attainment and economic vitality, although its favourable population-dynamics profile remains descriptive rather than statistically robust after correction. These contrasts are closely related to wider regional embedding. Border location is filtered through physical geography, regional economic traditions, post-war trajectories, settlement patterns, accessibility and institutional arrangements. Historically developed social ties across areas that later came to lie on opposite sides of state borders and their reconfiguration following the dissolution of Yugoslavia may also provide context for present-day differences in border perceptions. The southern sector along the Croatian border is particularly distinctive, with stronger accessibility, practical links with the Croatian littoral and Dalmatian hinterland, and a regional setting in which entrepreneurial activity and circulation are more strongly embedded in everyday life. The Serbia-facing sector is more closely associated with cumulative disadvantage, although this pattern is not uniform at the municipal level: Bijeljina benefits from its location in the productive Semberija plain and stronger functional capacity. The Montenegro-facing sector is more mixed, with Foča combining weaker labour-market and demographic outcomes with stronger cross-border cultural orientation and a post-war territorially fragmented setting.

The EU/non-EU distinction adds another, but limited, explanatory layer. Since Croatia's accession to the European Union in 2013 and the Schengen Area in 2023, the Bosnia and Herzegovina–Croatia boundary has also functioned as an external EU border. Yet after correction for multiple testing, economic vitality is the only dimension that remains significantly different between EU-facing and non-EU-facing municipalities, and the survey does not show a uniform perceptual advantage across EU-facing cases. This is consistent with Leutloff-Grandits's (2023) interpretation of parts of the Croatian borderland as a "double periphery", where the EU border regime reshapes opportunities and constraints without producing uniformly favourable local outcomes. EU-facing status therefore operates as a conditioning factor whose effects depend on infrastructure, business networks, everyday cross-border routines and governance capacity (Ünay & Alagöz, 2026).

The survey results further show that mobility is one of the clearest mechanisms through which the border acquires practical economic meaning. More frequent border crossing is associated with more positive assessments of its economic role, suggesting that the border becomes a resource where crossing is regular and embedded in routines such as shopping, leisure and family visits. Where mobility is infrequent or narrow in purpose, the border is less likely to be interpreted as a development opportunity. The contrast between Posušje and Bosansko Grahovo illustrates this particularly well. Posušje combines more favourable structural indicators with frequent crossings and clearly more positive evaluations of the border's economic role. This pattern is consistent with Posušje's location in western Herzegovina, close to Imotski, and with its connections to neighbouring Croatia, which are particularly relevant for flows of goods and tourism (Općina Posušje, 2021), as well as longstanding labour-migration ties between western Herzegovina and the

Dalmatian hinterland (Žerić & Brunnbauer, 2024). Bosansko Grahovo shows the opposite configuration. Its marginalisation reflects severe demographic decline, post-war displacement, difficult accessibility and fragmented functional ties rather than border location alone. Although administratively part of Canton 10, it occupies a transitional regional position, with functional links towards Drvar and Banja Luka (Avdić Marić et al., 2026). Its predominantly Serb population distinguishes it from most municipalities in the southern Croatian sector, while historically strong ties with nearby Knin point to an additional cross-border dimension of its regional position. These ties are considerably weaker today, further reinforcing the municipality's peripheral position within the wider borderland system (Avdić Marić et al., 2026). The contrast between these two cases shows that shared sectoral affiliation does not imply a uniform local border experience. This interpretation is also supported by the patterns observed in the other municipalities. Bijeljina performs more positively in the survey than the broader Serbia-facing sectoral profile might suggest, while Brčko's special administrative status and institutional autonomy create a distinct setting for cross-border practices. Foča combines structural weakness with selective cross-border orientation, whereas Bužim, situated in Bosanska Krajina, combines pronounced regional attachment, consistent with historical accounts of Cazinska Krajina (Ljubović, 2018), with weaker cross-border cultural affinity and more socially anchored mobility.

Identity-related findings extend this differentiation into the symbolic domain. Posušje and Bužim provide particularly contrasting configurations. In Posušje, strong regional identity coincides with very high perceived cross-border cultural similarity and lower perceived similarity with other parts of Bosnia and Herzegovina. This corresponds with research showing that the territorialisation of Herzegovinian identity may vary according to ethnic and political-geographical context rather than following fixed historical boundaries (Botić & Grebenar, 2021). The Posušje case therefore points to an overlap between regional identification and cross-border cultural proximity. Bužim also shows strong regional identity, but much weaker cross-border cultural closeness, consistent with approaches that understand regional identity as socially and historically produced through memory, local narratives and changing regional geographies (Riding, 2015). Bijeljina and Foča display more layered internal and cross-border affinities, Brčko remains more mixed, while Bosansko Grahovo shows weaker identity orientations overall. These patterns support interpretations of border identity as locally assembled through social practice and differentiated symbolic meanings (Brambilla, 2015; Ünay & Alagöz, 2026). The positive association between border-crossing frequency and perceived cross-border cultural similarity is particularly important here. It suggests that cultural proximity is not only inherited or historically given, but also reinforced through recurrent contact. This can also be understood through border temporalities (Venken et al., 2026). In municipalities such as Posušje, the border enters everyday life through repeated and routinised movement, while in places such as Bosansko Grahovo it remains far less rhythmically embedded in daily practice.

Within the analytical framework applied in this study, the findings suggest that border location alone does not account for local disadvantage. Internal territorial fragmentation, weak connections with development centres, uneven infrastructure and administrative arrangements may be equally important in explaining differences among border areas.

7. Conclusions

The findings show that Bosnia and Herzegovina's borderlands are better understood as differentiated border situations than as a uniform peripheral zone. Structural disadvantage, mobility and perceptions of the border do not follow the same pattern across the state boundary and municipal-level contrasts are often as important as broader sectoral differences. The border/non-border distinction shows limited explanatory value, while the most robust corrected sectoral differences are concentrated in vitality, educational attainment and economic vitality. The findings therefore support a relational understanding of border effects as locally mediated outcomes shaped by border location together with demographic and economic capacity, internal territorial fragmentation and regional embedding.

The study also demonstrates the value of combining municipality-level structural indicators with survey-based evidence. Frequent border crossing is associated with more positive perceptions of the border's economic role and with stronger perceived cultural proximity, while structurally disadvantaged areas do not necessarily experience the border in the same way. This mismatch between measured territorial conditions and lived border meanings is an important comparative finding. Across neighbouring-country contexts, the three Croatia-facing sectors are themselves heterogeneous, with the southern sector showing higher educational attainment and economic vitality than the northern and Serbia-facing sectors, while the Montenegro-facing sector shows no robust corrected pairwise differences. These patterns indicate that the neighbouring state and the EU/non-EU border regime are only part of the explanation, alongside

accessibility, regional economic trajectories and historically developed cross-border connections. This has wider relevance for post-socialist, post-conflict and institutionally fragmented borderlands, where formal border regimes interact with historically embedded mobility, identities and uneven regional development.

The practical implication is that borderland policy should avoid uniform territorial solutions. In Bosnia and Herzegovina, interventions need to respond to municipal and sectoral differences in accessibility, demographic capacity, local economic structure, cross-border mobility and institutional resources. More marginalised areas may require basic connectivity, service provision and demographic stabilisation, while areas with established cross-border routines may benefit more from measures that facilitate economic exchange, mobility and institutional cooperation. The same principle is relevant to wider European border policy where regulatory integration alone does not determine whether a border becomes a resource, as local capacity to use cross-border opportunities remains equally important.

Several limitations should be considered when interpreting the findings. The structural assessment combines census and more recent administrative data, while the five-sector delimitation necessarily simplifies more fluid regional and functional geographies. The survey provides important local insight, but its case-based design does not support population-level estimates for all border municipalities. Future research could build on these findings through more temporally consistent municipal data, longitudinal surveys and qualitative investigation of everyday border practices, as well as through research designs that more explicitly examine the role of ethnic affiliation in shaping cross-border perceptions and interactions.

Funding: This research received no external funding.

Conflicts of Interest: The author declares no conflict of interest.

Data Availability Statement: The data that support the findings of this study are available from the author upon reasonable request, subject to ethical and privacy considerations.

Acknowledgements: 1. The survey involved adult participants and was anonymous, voluntary and non-interventional. Participants were informed about the purpose of the study, the anonymous treatment of their responses and their right to decline participation. Informed consent was obtained verbally or through agreement to complete the questionnaire. No personally identifying information was collected. Ethnic-affiliation data were analysed and reported only in aggregate. 2. The author used ChatGPT (OpenAI) solely to assist with translating the original Bosnian text, editing the English language, restructuring sentences and improving clarity. All interpretations, analyses, arguments and final wording were reviewed and approved by the author.

Appendix A.

Selected Items from the Survey Questionnaire

Source: Selected from the full survey instrument published in A. Avdić (2025).

A. Socio-demographic variables collected

- Gender (Male; Female; Prefer not to answer)
- Age group (18 – 24; 25 – 49; 50 – 64; 65+)
- Ethnic affiliation (Bosniak; Croat; Serb; Other; Prefer not to answer) (Note: Ethnic affiliation was collected as part of the broader survey and is reported descriptively in this study; it was not used as an independent explanatory variable).
- Place and municipality/city of residence (open-ended)
- Highest level of education attained (No formal education; Primary education; Secondary education; Higher education – college/university, with or without postgraduate degree)
- Marital status (Married; Single; Divorced; Widowed; Cohabiting)
- Do you have children? (Yes; No)
- Number of children (if applicable) (1; 2; 3; More than 3)
- Employment status (Employed – full-time; Employed – part-time; Unemployed – seeking work; Unemployed – not seeking work; Retired)

B. General development perception (independent of the border)

Note: Item labels (e.g., P15, P16...) correspond to the numbering used in the original survey questionnaire published in A. Avdić (2025).

- P15. To what extent do you agree that your municipality/city is economically developed? (Strongly agree; Mostly agree; Neither agree nor disagree; Mostly disagree; Strongly disagree)

C. Perceived effects of the border

- P16. In your opinion, how does the border location affect the local economy? (Very positively; Positively; Neither positively nor negatively; Negatively; Very negatively)
- P17. How favourably does the border location affect agriculture? (Very positively; Positively; Neither positively nor negatively; Negatively; Very negatively)
- P18. How favourably does the border location affect industry? (Very positively; Positively; Neither positively nor negatively; Negatively; Very negatively)
- P19. How favourably does the border location affect transport? (Very positively; Positively; Neither positively nor negatively; Negatively; Very negatively)
- P20. How favourably does the border location affect tourism? (Very positively; Positively; Neither positively nor negatively; Negatively; Very negatively)
- P22. In your opinion, how does the border location affect population change? (Very positively; Positively; Neither positively nor negatively; Negatively; Very negatively)

D. Cross-border practices

- P21. To what extent do you agree that your municipality/city has good cross-border cooperation with neighbouring municipalities/cities? (Strongly agree; Mostly agree; Neither agree nor disagree; Mostly disagree; Strongly disagree)
- P25. How often do you cross the border? (Daily; At least once a week; At least once a month; Several times a year; Rarely or never)
- P26. What are your main reasons for crossing the border? (Work-related; Visiting family; Shopping; Leisure/recreation; Other)
- P27. Which city outside your municipality do you visit most frequently and for what reasons? (open-ended)

E. Identity and cultural perceptions

- P31. To what extent do you agree that the border location has a strong influence on the regional identity of the population in your area (e.g., Krajina, Herzegovina, Podrinje, Posavina)? (Strongly agree; Mostly agree; Neither agree nor disagree; Mostly disagree; Strongly disagree)
- P32. To what extent do you agree that the culture of your area is similar to other parts of Bosnia and Herzegovina? (Strongly agree; Mostly agree; Neither agree nor disagree; Mostly disagree; Strongly disagree)
- P33. To what extent do you agree that the culture of your area is similar to the population across the state border? (Strongly agree; Mostly agree; Neither agree nor disagree; Mostly disagree; Strongly disagree)

Appendix B.

Table B1. Composition of composite socio-economic and demographic indices and included indicators

Indices	Indicators included (standardised; transformations in brackets)	k	Sources
Population Dynamics (POP_DYN)	Population change index 2013–2022 (BiH=100); Population change index 1991–2013 (BiH=100); Share of settlements with population increase (%)	3	S1–S4
Age Dependency Structure (AGE_DEP)	Population aged 0–14 in 2022 (%); Population aged 65+ in 2022 (%) [reverse]; Age dependency ratio in 2022 [reverse]	3	S2–S4
Vitality (VITAL)	Natality average 2015–2022 (‰); Mortality average 2015–2022 [reverse]; Vital index average 2015–2022 (births/deaths × 100)	3	S2–S4

Educational Attainment (EDU_ATT)	Higher education share in 2013 (%); Computer literacy in 2013 (%); Illiteracy rate in 2013 (%) [log1p; reverse]	3	S1
Educational Infrastructure (EDU_INF)	Primary schools per 10,000 population in 2022 [log1p]; Trend in primary schools 2013–2022 (index); Teachers per 1,000 population (2022)	3	S2, S3, S5
Labour Market (LABOUR)	Employment rate in 2022 (%); Female employment rate in 2022 (%); Unemployment rate in 2013 (%) [reverse]	3	S1–S3, S6–S7
Income & Welfare (INCOME_WELF)	Net wage in 2022 (BAM); Wage growth trend 2013–2022 (index); Average pension in 2022 (BAM)	3	S2, S3, S6–S7
Economic Vitality (ECON_VIT)	Business entities per 1,000 population in 2022 [log1p]; Trend in business entities 2013–2022 (index); Employment in tertiary sector in 2013 (%); Employment in primary sector in 2013 (%) [log1p; reverse]	4	S1–S3, S6–S7

Sources: S1 = 2013 Population Census (Agency for Statistics of Bosnia and Herzegovina, 2016); S2 = relevant annual editions of *Kantoni u brojkama for the Una-Sana Canton, Canton 10 and West Herzegovina Canton* (Federal Office of Statistics, 2014–2023); S3 = relevant annual editions of *Cities and Municipalities of Republika Srpska* (Republika Srpska Institute of Statistics, 2014–2023); S4 = Brčko District demographic statistics, including population estimates by age and vital statistics (Agency for Statistics of Bosnia and Herzegovina – Brčko Branch Office, 2023a); S5 = Brčko District education statistics (Agency for Statistics of Bosnia and Herzegovina – Brčko Branch Office, 2023b); S6 = Brčko District statistical bulletins covering employment, wages, pensions, and business entities (Agency for Statistics of Bosnia and Herzegovina – Branch Office Brčko District, 2023c); S7 = municipality-level socioeconomic indicators for the Federation of Bosnia and Herzegovina (Federal Institute for Development Programming, 2023). All composite indices and transformations are authors' calculations.

Table B2. Direction and significance of pairwise differences across border sectors (post hoc tests).

Index	Sector showing advantage	Compared to	Direction
Vital index	S1	S2	S1 > S2
Educational attainment	S3	S2, S4	S3 > S2; S3 > S4
Economic vitality	S3	S2, S4	S3 > S2; S3 > S4

Note: Only indices remaining significant after Holm correction of the omnibus Kruskal–Wallis tests are shown. Pairwise comparisons were performed using Dunn's test with Bonferroni adjustment.

Table B3. EU-facing vs non-EU-facing border sectors across composite indices (Mann–Whitney U test)

Index	EU-facing mean rank	Non-EU mean rank	p-value	Holm-adjusted p-value
Population dynamics	21.08	14.09	.073	.437
Age dependency	19.65	17.45	.572	1.000
Vital index	18.04	21.27	.406	1.000
Educational attainment	19.04	18.91	.973	1.000
Labour market	21.62	12.82	.024	.167
Income & welfare	21.08	14.09	.073	.437
Economic vitality	22.46	10.82	.003	.022
Educational infrastructure	19.15	18.64	.894	1.000

Note: EU-facing border municipalities are those located along Bosnia and Herzegovina's border with Croatia ($n = 26$), whereas non-EU-facing border municipalities are those located along its borders with Serbia and Montenegro ($n = 11$). Holm-adjusted p-values were calculated across the eight composite indices to control for multiple testing. Adjusted p-values below .05 are shown in bold.

References

- Agency for Statistics of Bosnia and Herzegovina. (2016). *Census of population, households and dwellings in Bosnia and Herzegovina, 2013: Final results*. https://www.popis.gov.ba/popis2013/doc/RezultatiPopisa_BS.pdf
- Agency for Statistics of Bosnia and Herzegovina, Branch Office Brčko District. (2023a). *Demografija u Brčko distriktu BiH, 2018–2022* [Demography in the Brčko District of Bosnia and Herzegovina, 2018–2022] (Year XXII, No. 5). https://bhas.gov.ba/data/Publikacije/Bilteni/2023/BRC_07_2022_Y4_1_BS.pdf
- Agency for Statistics of Bosnia and Herzegovina, Branch Office Brčko District. (2023b). *Statistika obrazovanja od kraja 2018/2019. do početka 2022/2023. školske godine* [Education statistics from the end of the 2018/2019 to the beginning of the 2022/2023 school year] (Year XXI, No. 13). https://bhas.gov.ba/data/Publikacije/Bilteni/2023/BRC_05_2022_TB_2_BS.pdf
- Agency for Statistics of Bosnia and Herzegovina, Branch Office Brčko District. (2023c). *Statistički podaci Brčko distrikta BiH* [Statistical data of the Brčko District of Bosnia and Herzegovina] (Year XXII, No. 1). https://bhas.gov.ba/data/Publikacije/Bilteni/2023/BRC_00_2023_B1_1_BS.pdf
- Anđelković-Stoilković, M. (2019). Representation of the demographic problems of Serbian border region in public policy. *Demografija*, 16, 103–118. <https://doi.org/10.5937/demografija1916103A>
- Anđelković-Stoilković, M., Devedžić, M., & Vojković, G. (2018). The border regions of Serbia: Peripheral or marginal areas. *TRAMES*, 22(2), 211–227. <https://doi.org/10.3176/tr.2018.2.07>
- Anderson, J., & O'Dowd, L. (1999). Borders, border regions and territoriality: Contradictory meanings, changing significance. *Regional Studies*, 33(7), 593–604. <https://doi.org/10.1080/00343409950078648>
- Avdić Marić, A., Avdić, B., & Zupanc, I. (2026). The vicious circle of spatial marginalization: Bosansko Grahovo in Bosnia and Herzegovina. *Revue Roumaine de Géographie / Romanian Journal of Geography*, 70(1), 21–40. <https://doi.org/10.59277/RRG.2026.1.02>
- Avdić, A. (2025). *Geografski aspekt proučavanja pograničja – primjer Bosne i Hercegovine* [Geographical aspects of borderland research – the case of Bosnia and Herzegovina] [Doctoral dissertation, University of Zagreb, Faculty of Science]. Repository of the Faculty of Science, University of Zagreb. <https://urn.nsk.hr/urn:nbn:hr:217:029486>
- Avdić, A., & Avdić, B. (2023). Center and periphery in Bosnia and Herzegovina – Social and spatial indicators of regional disparities. *Folia Geographica*, 65(2), 103–126.
- Avdić, A., Avdić, B., & Zupanc, I. (2022). Socio-demographic analysis of border regions of Bosnia and Herzegovina. *Acta geographica Slovenica*, 62(3), 7–19. <https://doi.org/10.3986/AGS.10859>
- Avdić, B., Mirić, R., Gekić, H., & Bidžan Gekić, A. (2022). Municipalities and cities along the entity boundary in Bosnia and Herzegovina: Problems of local and regional development. In S. Gorin & I. Radevski (Eds.), *Proceedings of the 8th International Scientific Conference GEOBALCANICA 2022* (pp. 229–239). Geobalcanica Society. <https://doi.org/10.18509/GBP22229A>
- Berceanu, I.-C., Popa, N., & Crețan, R. (2023). Towards a regional crossover model? The roles played by spatial vicinity and cultural proximity among ethnic minorities in an East-Central European borderland. *Journal of Urban and Regional Analysis*, 15(2), 159–190. <https://doi.org/10.37043/JURA.2023.15.2.1>
- Böhm, H., Boháč, A., Novotný, L., Drápela, E., & Opiola, W. (2024). Resilience of cross-border cooperation in the Neisse-Nisa-Nysa Euroregion after the pandemic: Bouncing in-between. *Journal of Borderlands Studies*, 39(6), 1083–1099. <https://doi.org/10.1080/08865655.2023.2276471>
- Botić, J., & Grebenar, D. (2021). Contemporary trends in the territorialisation of regional identities in Bosnia and Herzegovina on the example of Croats in Herzegovina. *Dela*, 55, 107–124. <https://doi.org/10.4312/dela.55.107-124>
- Brambilla, C. (2015). Exploring the critical potential of the borderscapes concept. *Geopolitics*, 20(1), 14–34. <https://doi.org/10.1080/14650045.2014.884561>
- Brambilla, C., & Jones, R. (2020). Rethinking borders, violence, and conflict: From sovereign power to borderscapes as sites of struggles. *Environment and Planning D: Society and Space*, 38(2), 287–305. <https://doi.org/10.1177/0263775819856352>
- Crețan, R., Covaci, R. N., & Jucu, I. S. (2023). Articulating 'otherness' within multiethnic rural neighbourhoods: Encounters between Roma and non-Roma in an East-Central European borderland. *Identities*, 30(1), 93–111. <https://doi.org/10.1080/1070289X.2021.1920774>

- Durand, F. (2015). Theoretical framework of the cross-border space production – The case of the Eurometropolis Lille-Kortrijk-Tournai. *Journal of Borderlands Studies*, 30(3), 309–328. <https://doi.org/10.1080/08865655.2015.1066701>
- Federal Institute for Development Programming. (2023). *Socioekonomski pokazatelji po općinama FBiH 2022* [Socioeconomic indicators by municipalities of the Federation of Bosnia and Herzegovina 2022]. https://fzzpr.gov.ba/files/Socioekonomski%20pokazatelji%20po%20op%C4%87inama/Socioekonomski%20pokazatelji%202022_web.pdf
- Federal Office of Statistics. (2023a). *Kanton 10 u brojkama 2023* [Canton 10 in figures 2023]. <https://fzs.ba/wp-content/uploads/2023/07/Kanton-10-u-brojkama.pdf>
- Federal Office of Statistics. (2023b). *Unsko-sanski kanton u brojkama 2023* [Una-Sana Canton in figures 2023]. <https://fzs.ba/wp-content/uploads/2023/07/Unsko-sanski-kanton-u-brojkama.pdf>
- Federal Office of Statistics. (2023c). *Zapadnohercegovački kanton u brojkama 2023* [West Herzegovina Canton in figures 2023]. <https://fzs.ba/wp-content/uploads/2023/07/Zapadnohercegova%C4%8Dki-kanton-po-kantonima.pdf>
- Fuerst-Bjeliš, B., & Vukosav, B. (2019). Landscapes of identities in shared spaces of the borderlands. *Europa Regional*, 26(2), 5–13. <https://nbn-resolving.org/urn:nbn:de:0168-ssaoar-66829-3>
- Jansen, S. (2023). How Bosnia and Herzegovina was bordered: The supervised making of a border/mobility assemblage in the European semiperiphery. *Comparative Southeast European Studies*, 71(2), 190–209. <https://doi.org/10.1515/soeu-2022-0067>
- Klemenčić, M. (2000). The boundaries, internal order and identities of Bosnia and Herzegovina. *Boundary and Security Bulletin*, 8(4), 63–71.
- Kolossov, V., & Scott, J. (2013). Selected conceptual issues in border studies. *Belgeo*, (1). <https://doi.org/10.4000/belgeo.10532>
- Leimgruber, W. (2004). *Between global and local: Marginality and marginal regions in the context of globalization and deregulation*. Ashgate.
- Leutloff-Grandits, C. (2023). “We are not just the border of Croatia; this is the border of the European Union ...” The Croatian borderland as “double periphery.” *Journal of Borderlands Studies*, 38(2), 265–282. <https://doi.org/10.1080/08865655.2022.2104340>
- Ljubović, E. (2018). *Historijski i kulturološki identitet Cazina i Cazinske krajine do 1918. – historija i kultura Cazina i Cazinske krajine i neka prezimena* [Historical and cultural identity of Cazin and the Cazin region until 1918 – History and culture of Cazin and the Cazin region and selected surnames]. JU Kulturni centar Cazin.
- Máliková, L., Farrell, M., & McDonagh, J. (2016). Perception of marginality and peripherality in an Irish rural context. *Quaestiones Geographicae*, 35(4), 93–105. <https://doi.org/10.1515/quageo-2016-0037>
- Marić, I., & Avdić, A. (2023). Derivation of geographical marginalization index of Bosnia and Herzegovina using GIS multicriteria decision analysis. *Geographica Pannonica*, 27(4), 239–253. <https://doi.org/10.5937/gp27-46223>
- Newman, D. (2006). The lines that continue to separate us: Borders in our ‘borderless’ world. *Progress in Human Geography*, 30(2), 143–161. <https://doi.org/10.1191/0309132506ph599xx>
- Općina Posušje. (2021). *Strategija razvoja općine Posušje za razdoblje 2021–2027. godine* [Development strategy of the Municipality of Posušje for the period 2021–2027]. <https://www.opcina-posusje.ba/wp-content/uploads/2021/07/Strategija-razvoja-opcine-Posusje-21-27.pdf>
- Oppido, S., Ragozino, S., & Esposito De Vita, G. (2023). Peripheral, marginal, or non-core areas? Setting the context to deal with territorial inequalities through a systematic literature review. *Sustainability*, 15(13), Article 10401. <https://doi.org/10.3390/su151310401>
- Paasi, A. (1996). *Territories, boundaries and consciousness: The changing geographies of the Finnish-Russian border*. John Wiley & Sons.
- Paasi, A. (2011). A border theory: An unattainable dream or a realistic aim for border scholars? In D. Wastl-Walter (Ed.), *The Ashgate research companion to border studies* (pp. 11–31). Ashgate.
- Perkmann, M. (2003). Cross-border regions in Europe: Significance and drivers of regional cross-border co-operation. *European Urban and Regional Studies*, 10(2), 153–171. <https://doi.org/10.1177/0969776403010002004>
- Prokkola, E.-K. (2008). Resources and barriers in tourism development: Cross-border cooperation, regionalization and destination building at the Finnish-Swedish border. *Fennia – International Journal of Geography*, 186(1), 31–46. <https://fennia.journal.fi/article/view/3710>

- Republika Srpska Institute of Statistics. (2023). *Cities and municipalities of Republika Srpska, 2023*. https://www.rzs.rs.ba/static/uploads/bilteni/gradovi_i_opstine_republike_srpske/2023/Gradovi_I_Opstine_Republike_Srpske_2023_WEB.pdf
- Riding, J. (2015). Landscape, memory, and the shifting regional geographies of Northwest Bosnia-Herzegovina. *GeoHumanities*, 1(2), 378–397. <https://doi.org/10.1080/2373566X.2015.1093917>
- Schönwald, A., Spellerberg, A., & Weber, F. (2022). Borders – identities – home: Theory-based approaches to constructs and concepts in a cross-border context. In K. Pallagst, A. Hartz, & B. Caesar (Eds.), *Border futures – Zukunft Grenze – Avenir frontière: The future viability of cross-border cooperation* (pp. 141–153). ARL – Academy for Territorial Development in the Leibniz Association. <https://nbn-resolving.org/urn:nbn:de:0156-40970927>
- Scott, J. W. (Ed.). (2020). *A research agenda for border studies*. Edward Elgar Publishing. <https://doi.org/10.4337/9781788972741>
- Sohn, C. (2014). Modelling cross-border integration: The role of borders as a resource. *Geopolitics*, 19(3), 587–608. <https://doi.org/10.1080/14650045.2014.913029>
- Sporazum između Bosne i Hercegovine i Republike Hrvatske o pograničnom prometu [Agreement between Bosnia and Herzegovina and the Republic of Croatia on Border Traffic]. (2013). *Službeni glasnik Bosne i Hercegovine – Međunarodni ugovori [Official Gazette of Bosnia and Herzegovina – International Treaties]*, 2/2014.
- Ünay, H., & Alagöz, R. (2026). Introduction: Borders as regime, bordering as experience in Turkey's borders and borderlands. *Journal of Borderlands Studies*, 41(1), 1–14. <https://doi.org/10.1080/08865655.2026.2617230>
- van Houtum, H. (2000). III European perspectives on borderlands: An overview of European geographical research on borders and border regions. *Journal of Borderlands Studies*, 15(1), 56–83. <https://doi.org/10.1080/08865655.2000.9695542>
- van Houtum, H. (2011). The mask of the border. In D. Wastl-Walter (Ed.), *The Ashgate research companion to border studies* (pp. 49 – 61). Ashgate.
- van Houtum, H., & Eker, M. (2016). Redesigning borderlands: Using the Janus-face of borders as a resource. In C. Brambilla, J. Laine, J. W. Scott, & G. Bocchi (Eds.), *Borderscapes: Imaginations and practices of border making* (pp. 41–521). Routledge. <https://doi.org/10.4324/9781315569765>
- van Houtum, H., & van der Velde, M. (2004). The power of cross-border labour market immobility. *Tijdschrift voor Economische en Sociale Geografie*, 95(1), 100–107. <https://doi.org/10.1111/j.0040-747X.2004.00296.x>
- van Houtum, H., & van Naerssen, T. (2002). Bordering, ordering and othering. *Tijdschrift voor Economische en Sociale Geografie*, 93(2), 125–136. <https://doi.org/10.1111/1467-9663.00189>
- Venken, M., Wassenberg, B., & Brunet-Jailly, E. (2026). Border temporalities: Reflections on (post) modernity and age. *Journal of Borderlands Studies*. Advance online publication. <https://doi.org/10.1080/08865655.2026.2637490>
- Vlada Unsko-sanskog kantona. (2021). *Strategija razvoja Unsko-sanskog kantona za period 2021–2027* [Development strategy of the Una-Sana Canton for the period 2021–2027]. <https://strategija.vladausk.ba/files/Strategije%20razvoja/Strategija%20USK.pdf>
- Walther, O. J., Amilhat Szary, A.-L., Brambilla, C., Brunet-Jailly, E., Klatt, M., Laine, J. P., Moyo, I., Nugent, P., Ptak, T., & Radil, S. M. (2023). Border studies at 45. *Political Geography*, 104, Article 102909. <https://doi.org/10.1016/j.pol-geo.2023.102909>
- Wastl-Walter, D. (Ed.). (2011). *The Ashgate research companion to border studies*. Ashgate.
- Więckowski, M. (2025). The contemporary Polish borders in a state of change. *GeoJournal*, 90, Article 1. <https://doi.org/10.1007/s10708-024-11248-7>
- Wille, C. (2022). Borderscapes. In A. M. Fellner & E. Nossem (Eds.), *UniGR-CBS online glossary border studies*. Saarland University. <https://doi.org/10.22028/D291-37379>
- Wille, C. (2024). Border complexities: Outlines and perspectives of a complexity shift in border studies. In C. Wille, C. Leutloff-Grandits, F. Bretschneider, S. Grimm-Hamen, & H. Wagner (Eds.), *Border complexities and logics of disorder* (pp. 31–56). Nomos. <https://doi.org/10.5771/9783748922292-31>
- Wille, C. (2025). Border(ing)s: A border-studies perspective: Bringing migration studies and border studies into a fruitful dialogue. *Current Issues in Migration Research*, 2(1), 18–24. <https://doi.org/10.24834/cimr.2025.1.1909>
- Wilson, T. M., & Donnan, H. (Eds.). (2012). *A companion to border studies*. Wiley-Blackwell. <https://doi.org/10.1002/9781118255223>
- Yuval-Davis, N., Wemyss, G., & Cassidy, K. (2019). *Bordering*. Polity Press.

Zakon o graničnoj kontroli [Law on Border Control]. (2025). *Službeni glasnik Bosne i Hercegovine [Official Gazette of Bosnia and Herzegovina]*, 7/2025.

Žerić, S., & Brunnbauer, U. (2024). "The gastarbeiters built everything for us." Migrations, memories, and emptiness in the Dalmatian hinterland. *Contemporary Southeastern Europe*, 11(1), 12–37.
<https://doi.org/10.25364/02.11:2024.1.2>

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of EUROGEO and/or the editor(s). EUROGEO and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions, or products referred to in the content.