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Territorial identity of a region: A review of data collection techniques

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Abstract

This scoping review focuses on methodological approaches and, in particular, data collection techniques, for investigating part of the identity of a region – the territorial identity (boundaries) – within the field of new regional geography. The paper builds on a continuously expanding compilation of studies from academic databases and supplementary reference searches in geographically oriented journals. Reviewing 76 articles, it identifies the principal data collection techniques, including the utilisation of secondary sources (e.g. literature and maps or databases of place names) and strategies for obtaining primary data with questioning. These represent two analytical perspectives: indirect (secondary data) and direct (primary data) identification of territorial identity. The techniques are analysed concerning methodological approaches, including the use of territorial identity markers or territorial identity perception, as well as in terms of various scales and research character (single or multiple regions examination). The findings demonstrate that secondary data are predominantly used for delimiting regions through territorial identity markers whereas primary data are employed mainly to delimit regions reflecting territorial identity perception. Furthermore, the choice of data is not inherently dependent on region scale, as even world regions can be studied using questioning. Additionally, the absence of temporal analysis and the under-representation of mixed research designs in the studies suggest avenues for future research. Integrating diverse data collection techniques and methodological approaches might capture the concept of the region better, offering valuable insights for theoretical advancement and practical applications.

Keywords: new regional geography, territorial identity, territorial shape, delimitation of region, border, boundary, identity of region, data collection techniques

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Introduction

Boundaries, delimiting the territorial shape of a region, have attracted the attention of geographers for a long time (see Minghi, J.V. 1963). Recognised as an essential component of the identity of a region (Paasi, A. 1986), they have also been studied from the perspective of new regional geography, in which this paper is anchored. While this study engages with scholars explicitly aligned with this field, it also draws on earlier works (e.g. Brownell, J.W. 1960; Reed, J.S. 1976) predating its formal establishment in the 1980s (a detailed overview of regional geography evolution provide, e.g. Kasala, K. and Šifta, M. 2017) and incorporates insights from related sub-disciplines in linguistics (e.g. Preston, D.R. 2010). Historically, many studies aimed to delimit particular regions (Zelinsky, W. 1980), with potential for applications in education (e.g. Alderman, D.H. and Good, D.B. 1996) or regional development (e.g. Stoffelen, A. *et al.* 2024). Recently, however, research has increasingly shifted towards redefining the concept of a region (e.g. Vukosav, B. and Fuerst-Bjeliš, B. 2016). Ad-

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ditionally, some point out that *where* (and *how*) people perceive regions can influence their identification with those regions as well as regionalism (Jordan, T.G. 1978; Marek, P. 2023).

Despite long-standing interest in the territorial shape (boundaries) of a region, the methods employed for delimiting regions often receive insufficient attention. This scoping review employs a content analysis of existing literature to address the following goals: first, to classify and discuss the techniques employed to collect data; second, to examine their interrelationship with methodological approaches used to delimit regions' territories/boundaries (the territorial identity of a region); and third, to analyse how the scale of a region influences the choice of data collection techniques. The study highlights research gaps, proposes future directions and offers recommendations for advancing boundary research.

Territorial identity as seen by new regional geography

New regional geography explores the concept of the region theoretically, as a social construct, spatial structure and dynamic process (Thrift, N. 1983; Paasi, A. 1986; Gilbert, A. 1988; Jonas, A. 1988; Pudup, M.B. 1988; Murphy, A.B. 1991). The region as a social construct implies it is created and exists primarily in people's minds as a perceptual region (Zimmerbauer, K. 2011; Vukosav, B. and Fuerst-Bjeliš, B. 2016; Marek, P. 2020, 2023). Conversely, the region as a spatial structure influences people and may be an important source of, among other things, their identification with a certain spatial unit, as well as a driving engine of regionalism (Keating, M. 1998; Paasi, A. 2009a; Zimmerbauer, K. 2011; Marek, P. 2023). Paasi, A. (1986, 2002) and the previously mentioned authors conceptualised/classified regional identity into three dimensions. An instrumental dimension, that is, regionalism (regional activism), is reached by the smallest number of regions, while more regions attain an affective dimension – people's identification with the region and/or regional community (the regional identity of people). Ultimately, all regions have a cognitive dimension, that is, their identity (the identity of a region). These dimensions are in continuous change/development, as regions (and generally regional identities) are dynamic processes that are "constantly becoming" (Pred, A. 1984, 279). Region (and regional identity) not only emerges but also reproduces, transforms and may eventually disappear (Paasi, A. 1986; Raagmaa, G. 2002), as evidenced, for example, by Chromý, P. *et al*. (2009), studying the reproduction of several Czech historical regions, by Konopski, M. (2021), investigating the transformation of a Polish region of Podlasie, and by Simon, C. *et al*. (2010), exploring a Dutch disappearing region of Noordoostpolder.

The identity of a region (cognitive dimension) is categorised into two types: (1) "objective" formal and functional regions, based on objective criteria, and (2) subjective images of the region, based on perception, that is, perceptual regions (Paasi, A. 1986; Marek, P. 2023). According to Paasi's institutionalisation of regions theory, all regions (including formal, functional and perceptual regions) have three "shapes" that give identity to the region: (1) its territorial shape delimited by boundaries, (2) its symbolic shape, mainly its proper name (a choronym) and (3) its institutional shape (Paasi, A. 1986, 2002).

This article focuses on the territorial shape of a region, referred to as its territorial identity. Although the relational view of the region questions the territorial approach, downplaying boundaries (e.g. Allen, J. *et al.* 1998), the territorial approach, as well as boundaries, remain relevant (Paasi, A. and Zimmerbauer, K. 2016; Zimmerbauer, K. *et al.* 2017) and widely studied to the present.

Methods for studying territorial identity in new regional geography differ in (1) data collection techniques and (2) methodological approaches, although Peng, J. *et al.* (2020, 11–12), for example, do not distinguish them. Although the result section details data collection techniques, their close interrelationship with methodological approaches used to delimit regions' territories/boundaries requires attention. Therefore, an overview of these approaches is provided; their more profound conceptualisation (as well as related data evaluation and interpretation techniques) should also be discussed closely, but this is out of the scope of this article.

Some authors (e.g. Lowry, J. 2013; Melnychuk, A. *et al.* 2014) note that territorial identity can be studied (and delimited) in two major ways. The first examines people's perceptions (*territorial identity perception*), as apparently initiated by Brownell, J.W. (1960). The second focuses on *territorial identity markers,* attributed within new regional geography to Reed, J.S. (1976), however, defining regions based on various ethnographic characteristics, for example, was already established among ethnographers much earlier (see Drápala, D. and Pavlicová, M. 2014). Melnychuk, A. *et al.* (2014, 159) propose a third methodological approach involving an analysis of historical-geographical conditions of *territorial identity development*. Finally, a fourth methodological approach can be identified as the *territorial identity discourse,* which should precede the previous one since the region is a dynamic process and it is beneficial to understand its current shape before proceeding with its development. This approach, apparently initiated by Sinnhuber, K.A. (1954), focuses on analysing territorial identity through the subjective perceptions of various experts, who define these regions using a scientific methodology. Nevertheless, territorial identities can also be approached based on objective criteria (the formal and functional regions mentioned above) within new regional geography (e.g. Staut, M. *et al.* 2007; Marek, P. 2023).

Methodology

This study employed an initial compilation of 59 published articles obtained from the Web of Science and Scopus databases, along with other sources, intending to identify data collection techniques for the identification of territorial identity. The compilation, developed during the authors' previous years-long interest through the "snowball" technique, revealed significant methodological challenges related to the ambiguity of keyword definitions *(Figure 1*, A*)* for subsequent supplementary reference searches. This issue, previously highlighted by Kitchin, R. (1994), for example, may be attributed to the absence of a sophisticated theory of boundaries (Paasi, A. 2009b), which significantly limits the precision of a systematic search process within the context of a "scoping review" (Tricco, A.C. *et al.* 2018).

To identify other relevant sources, the search in the Web of Science database relied on a combination of keywords such as (vernacular or perceptual) region, mental map, identity, border, territorial, perception, marker, delineation and their synonyms (e.g. boundary, cognition, spatial). Conducted in mid-September 2024, this search yielded additional potential articles to enhance the compilation *(Figure 1*, B*)*. However, four inclusion and exclusion criteria were chosen: (1) only articles were included, excluding books and other sources; (2) the focus was narrowed to geographically oriented journals, excluding those focusing on medicine or engineering; (3) only English-language publications were considered due to language barriers; (4) duplicates and incomplete citations (without abstracts) were removed.

The review selection process comprised four additional stages. Initially, abstracts lacking terms "*border, boundary, zone, frontier, area, territory, space (spatial), delimit (delineat), percept* or *vernacular*" were excluded, as these terms broadly reflect the concept of delimiting regions. Concurrently, the aforementioned keywords encompassed studies from the initial compilation and, thus, were subsequently excluded from the subsequent compilation. An analysis of keyword frequency in abstracts facilitated the identification of relevant studies, which were then subjected to a cross-check screening by the authors based on the article title. Ultimately, only those studies that addressed the delimitation of regions under the conceptual framework of new regional geography were selected following a com-

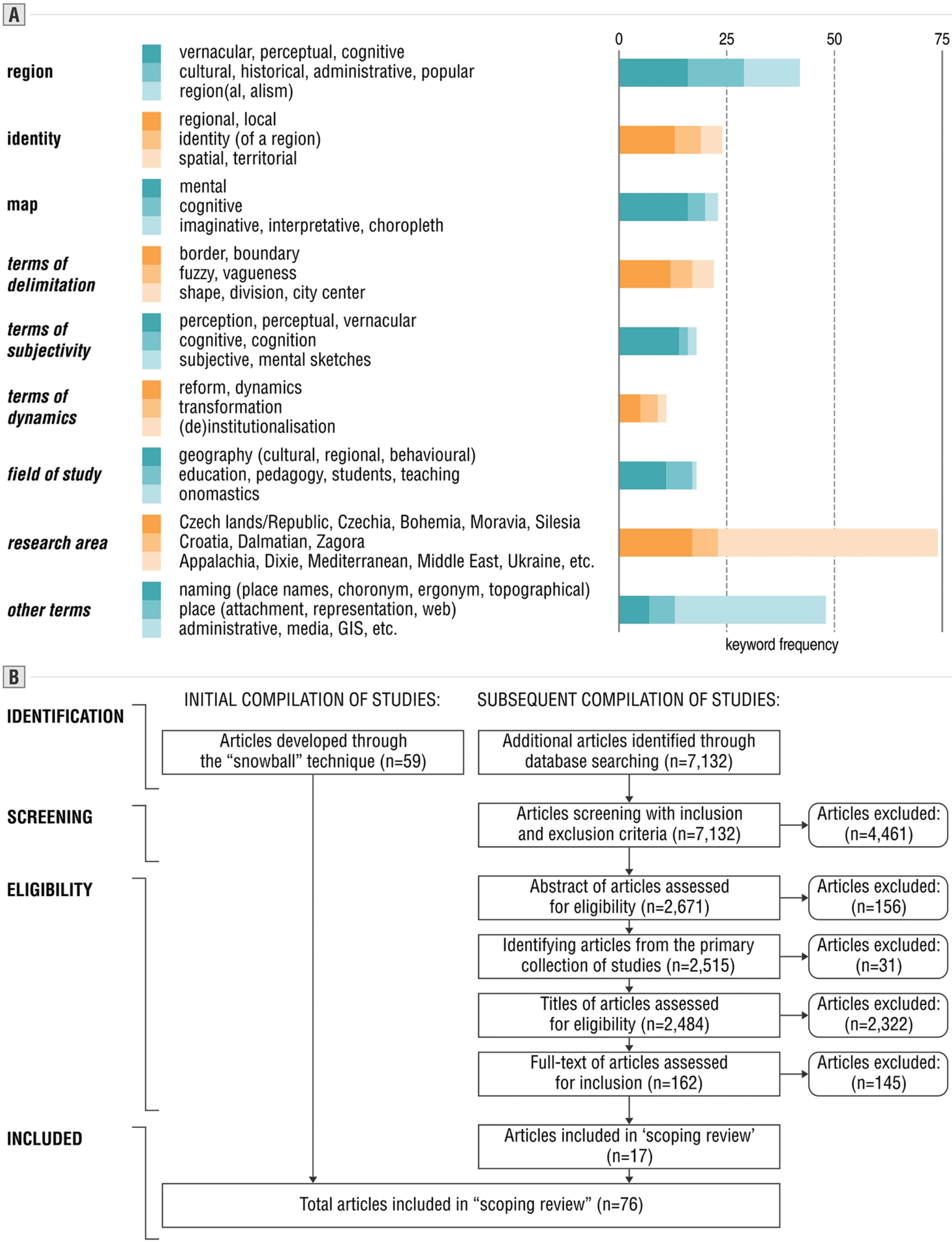

Fig. 1. List of the most frequent keywords in the initial compilation of studies (A), and the process of identifying studies for the subsequent compilation of studies (B). *Source*: Authors’ own elaboration.

prehensive review of the articles' full texts. As a result, 17 more studies were added. It is important to acknowledge the inherent subjectivity of this selection process, as well as its potential limitations, particularly the reliance on a single database and the exclusive focus on English-language studies, which may not fully capture the width of relevant studies. In the latest modifications, mainly English texts were selected from the initial compilation (with three exceptions from the Czech environment due to their exceptional specificities in data collection), and when several articles of the same author(s) were written from one data collection only one representative study was selected.

The data collection techniques and their details are outlined in the result section. While only a few selected studies showcase their use, these techniques are commonly applied in other research context as well. Moreover, the identified studies sometimes combine various methodological approaches to delimit the region, using a combination of data collection techniques. All the techniques identified in the studies are analysed in terms of the methodological approaches used, and their connection to the regions being studied.

Identified data collection techniques to delimit a region

This chapter reviews data collection techniques employed in past research. Each subchapter addresses distinct techniques and the sources of data for analysis. Two principal techniques may be recognised in the research of territorial identity: (1) techniques relying on secondary sources, and (2) techniques generating primary data. Despite efforts to structure data collection techniques under the identified methodological approaches to delimit a region, overlaps among them complicate this structuring, as certain data collection techniques are linked to multiple methodological approaches *(Figure 2).*

Literature, spatial Information and researchers' field notes analysis

A comprehensive review of the literature is crucial for understanding any research (Clifford, N. *et al.* 2010), including territorial identity. This technique involves investigating the current boundaries of a region, that is, the territorial identity discourse, through analysis of

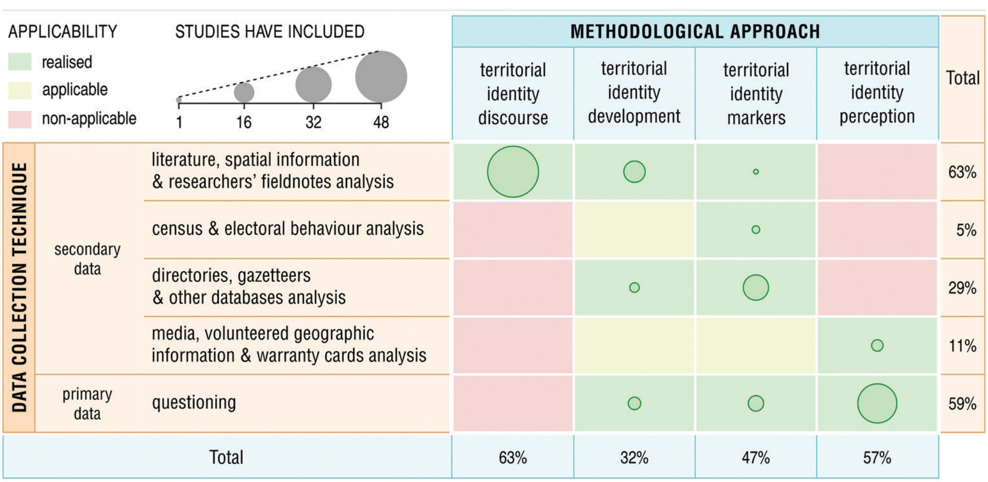

Fig. 2. Interrelationship of techniques and approaches and their frequency of usage in the compilation of studies. *Source*: Authors' own elaboration.

regional geography textbooks, cartographic documents, GIS databases, laws or academic and popular literature in general. This initial step provides insight into a region's contemporary territorial identity, guiding subsequent evaluation and interpretation of data obtained through other techniques. Furthermore, some authors employ this technique to investigate territorial identity development, as literature and maps provide both contemporary and historical perspectives.

Numerous authors have drawn upon the aforementioned sources of information, particularly in studies on (de)institutionalised regions, where the current or past state of the region's borders serves as a research foundation (e.g. Bartůněk, M. and Bláha, J.D. 2023; Marek, P. 2023). However, some researchers compare the territorial shape of the same region across several studies, highlighting variations in boundaries influenced by different geographical aspects, as demonstrated by Hale, R.F. (1983), and Tandarić, N. *et al.* (2013). Other studies explore varying boundaries based on the geographical location of the study, such as Bláha, J.D. and Nováček, A. (2016), or Pánek, J. and Šenkeříková, M. (2018), who employ a systematic description accompanied by an analytical map.

Temporal approaches to boundary evolution are exemplified by Vukosav, B. (2015), who analysed the boundaries through cartographic representations and Semian, M. (2012), who examined evolving discourses on delimitation of the region by various authors and institutions.

Finally, the analysis of researchers' field notes offers additional insights, such as the documentation of cultural traits (Štika, J. 1961), which are methodologically classified under territorial identity markers.

Census and electoral behaviour analysis

Processing secondary data from government sources, particularly census records, allows the identification of territorial identity markers by providing insights into socio-cultural characteristics of the population such as language, religion and nationality/ethnicity, which, in some countries, can assist in defining boundaries.

Illustrative studies include those conducted by Vaishar, A. and Zapletalová, J. (2016), and Siwek, T. and Kaňok, J. (2000), which examine nationality data to inform further research. Although Bartos-Elekes, Zs. (2019) also employs ethnicity as a variable, the ethnic group under examination exhibits a wide range of distinct socio-cultural characteristics, including language and religion. Phillips, D.W. and Montello, D.R. (2017) adopt a more comprehensive approach, incorporating a wider range of demographic data and applying geodemographic classification.

In addition, Weakliem, D. and Biggert, R. (1999) propose using political preferences derived from election results to determine the territorial distribution of regional identity.

Directories, gazetteers and other databases analysis

The use of symbolic shape elements (proper names, emblems, logos, etc.) in cultural landscapes reflects the perception of the inhabitants who belong to that particular area (Melnychuk, A. *et al.* 2014). Accordingly, the identification of territorial identity markers or territorial identity development can be achieved through the utilisation of secondary data from (government) directories, gazetteers and other databases. For more details on proper names, see their categorisation in ICOS Terms (2023), or for symbolic elements in general, refer to Šifta, M. and Chromý, P. (2017).

A common technique in the reviewed studies is delimiting regions through institutions (businesses, educational, governmental and non-profit organisations) using choronyms in the institutions' names, that is, chrematonyms. This application can be demonstrated in the context of a single region (e.g. Colten, C.E. 1997; Vukosav, B. and Fuerst-Bjeliš, B. 2016; Sublett, M.D. 2021), or two overlapping regions (e.g. Reed, J.S. 1976; Ambinakudige, S.

2009; Andrews, J.R. and Finchum, A. 2020). Other authors concentrated on the potential for regionalisation within an administrative unit, that is, on the scale of a state (e.g. McEwen, J.W. 2014; Liesch, M. *et al.* 2015) or even a continent (e.g. Zelinsky, W. 1980). Additionally, some scholars (e.g. Weaver, R. and Holtkamp, C. 2015; Holtkamp, C. *et al.* 2018) have traced the characteristic appellatives for the region in toponyms or urban place names (e.g. hodonyms) and the occurrence of regions' names within them (Melnychuk, A. *et al.* 2014). In addition, some authors (Konopski, M. 2021; Marek, P. 2023) have identified, although through a distinct data collection technique, that territorial identity is shaped by settlement names, indicating an additional data source.

Authors addressing temporal aspects in their research either track the evolution of business names by repeating studies after several years (Reed, J.S. *et al.* 1990) or compare results with earlier studies (Alderman, D.H. and Beavers, R.M. 1999). Alternatively, they analyse the current use of business and institution names to observe transformations of the territorial identity from the previous state (Gnatiuk, O. and Melnychuk, A. 2019).

It is evident that proper names represent the most prevalent source of data within this category. However, as Gnatiuk, O. and Melnychuk, A. (2021) have demonstrated, the utilisation of other symbols representing the region, such as emblems and flags, has the potential to contribute to the definition of territorial identity as well.

Media, volunteered geographic information and warranty cards analysis

Unlike previous expert-based/government data, the data used in this technique emphasises subjective attitudes and utilises quantitative methods to analyse patterns of ordinary people's perceptions. Several authors have used newspaper articles, language corpora, and the media in general (Vukosav, B. and Fuerst-Bjeliš, B. 2015). A further example is *volunteered geographic information* (VGI) utilising the web, where the content is generated by internet users themselves (Goodchild, M.F. 2007). From a methodological perspective, all this represents an indirect approach to *territorial identity perception*.

In content analyses conducted by Vukosav, B. (2011), or Vukosav, B. and Fuerst-Bjeliš, B. (2015), newspapers were analysed to examine the relationship between municipalities and regions of interest, specifically looking at which municipalities are linked to which regions and how frequently these associations occur.

Within VGI, two principal aspects of data collection can be identified: first, trigger phrase searches are utilised (e.g. Jones, C.B. *et al.* 2008; Reinbacher, I. *et al.* 2008), as websites frequently link specific locations, such as cities, with the region's name; second, the use of geotags from platforms like Flickr, Instagram, Twitter and Wikipedia helps delimit a region (e.g. Gao, S. *et al.* 2017). A notable example is Shortridge, J.R. (1987), who used warranty cards in a case study specific to the United States.

Questioning

A survey is a key method for collecting primary data on territorial identity, capturing attitudes across large populations (Babbie, E. 2007) and allowing the direct exploration of territorial identity perception, and even territorial identity development and territorial identity markers. It encompasses research design elements like sampling and analysis (for further details on sampling see, e.g. Clifford, N. *et al.* 2010; for guidance on wording of questions see, e.g. Flowerdew, R. and Martin, D. 2005). This subchapter focuses on a questionnaire as the data collection technique (Gregory, D. *et al.* 2009) and emphasises differences across the reviewed studies, particularly in the formulation of questions, strategies employed throughout the questionnaires and the inclusion of a base map, all in relation to different attributes of regions.

Important factors within this technique are (1) the number of regions studied, and (2) their scale, as these elements influence the questionnaire design, strategy and interpretation, in other words, the presentation of the region's territorial shape. Regarding the number of regions, territorial identity can be investigated by focusing on (a) a single region (e.g. Pleić, T. *et al.* 2021), or a partial shape of one region through complementary studies (e.g. Staut, M. *et. al.* 2007; Tandarić, N. *et al.* 2013); (b) a border between neighbouring regions (e.g. Šerý, M. and Šimáček, P. 2012), or (c) multiple regions (e.g. Good, J.K. 1981). Regarding the scale of regions, questionnaires are typically used for (a) smaller regions within a single state (e.g. Heath, D.E. 1993; Semian, M. 2012); however, some studies focus on (b) regions that extend beyond a single state (e.g. Shortridge, J.R. 1985; Bláha, J.D. and Nováček, A. 2016), or even (c) regions on a global scale (e.g. Polonský, F. *et al.* 2010; Didelon, C. *et al.* 2011).

In designing questionnaires, two key aspects must be considered: (1) the formulation of questions by the researcher and (2) how respondents can answer. Questions may include requests to (a) "draw the boundary on a map" (e.g. Geršič, M. 2017), (b) "rate each cell in a polygon grid" (Montello, D.R. *et al.* 2014), (c) "include/exclude your local area in/from the region" (e.g. Brownell, J.W. 1960), or (d) "name local areas in the region" (e.g. Schlemper, M.B. and Panozzo, K.A. 2020). The nature of these questions depends on the ability to record the answer: for instance, (a) closed-ended questions can be used (e.g. Konopski, M. 2021), (b) multiple-choice questions allow respondents to select from multiple regions (e.g. Lamme, A.J. and Oldakowski, R.K. 1982), or (c) open-ended questions can be used, enabling respondents to identify their region without prompts (e.g. Jordan, T.G. 1978; Hale, R.F. 1984).

Questionnaires enable the implementation of opposite strategies: (1) in-person interaction with the respondent, or (2) avoiding such interaction. Face-to-face questioning represents an in-person strategy (e.g. Marek, P. 2023); one may also consider incorporating elements of interviews (e.g. Marek, P. 2020) or focus groups (e.g. Edmondson, D. 2018). In contrast, impersonal strategies include (a) telephone calls (e.g. Lamme, A.J. and Oldakowski, R.K. 2007), (b) sending the questionnaire to respondents by post (e.g. Zdorkowski, R.T. and Carney, G.O. 1985), or (c) using internet-based forms (e.g. Pánek, J. and Šenkeříková, M. 2018).

Special attention should be given to the base maps possibly used for recording regional boundaries concerning (1) their form and (2) their content. While most authors rely on (a) printed base maps (e.g. Ulack, R. and Raitz, K. 1981), the use of (b) online base maps has recently gained prominence (e.g. Pánek, J. and Šenkeříková, M. 2018). It is not always necessary for the map content to be displayed at all, as shown by the use of (a) blank paper (e.g. Kaisto, V. and Wells, C. 2021); conversely, (b) map content can abound with various topography elements (e.g. Marek, P. 2020), but frequently (c) it is reduced to representations of states with cities (e.g. Lowry, J. *et al.* 2008; Konopski, M. 2021). The topography elements and their lettering should be carefully considered especially for printed base maps, taking into account scale and map sheet size (Zaga, M. and Waisel, T.Y. 2023). Although many authors use base maps, the map content is often insufficiently considered, despite its influence on the results (see Stachowski, K. 2017). Perceptual dialectology, while focusing on language and linguistic region's delimitation (e.g. Bounds, P. 2015; Alhazmi, J. 2017), places greater emphasis on map content (e.g. Bounds, P. and Sutherland, C.J. 2018; Cramer, J. 2021; Jeszenszky, P. *et al.* 2024), a practice that should be more aligned with geographic studies.

The investigation of the distribution of language and dialect through questionnaires and the adaptation of standalone sociolinguistic interviews (e.g. Fotiou, C. and Grohmann, K.K. 2022) within perceptual dialectology represents a direct approach to territorial identity markers. A comparable approach is implied in a study conducted by Lowry, J. (2013), which asked respondents to identify symbols associated with the region that could serve as indicators of its boundaries, effectively linking the territorial and symbolic shapes of the region. Finally, some authors (e.g. Miroševič, L. and Vukosav, B. 2010; Melnychuk, A. and Gnatiuk, O. 2018) use the regional identity of people as a marker of territorial identity, similar to how census data is analysed in relation to nationality (although nationality represents only a part of the affective dimension).

Territorial identity development can also be investigated through questioning. Marek, P. (2020) and Konopski, M. (2021) demonstrate this in the case of historical regions, whose initial perceptual delimitation can be expected to align with the historical boundary. Kaisto, V. and Wells, C. (2021) explicitly asked their respondents how the current region's boundaries changed according to their opinion in a certain period. Similarly, questioning can also address temporal factors by comparing generational perspectives or adopting (semi-)longitudinal study (Lamme, A.J. and Oldakowski, R.K. 2007).

Conclusions and future research recommendations

This scoping review analysed 76 studies on the delimitation of territorial part/shape of the identity of regions, sourced through the "snowball" technique and targeted Web of Science searches. The paper classified data collection techniques in territorial identity research and demonstrates their integration within broader methodological approaches extensively used in new regional geography, emphasising the need for further investigation into these methods.

In general, secondary data sources (including literature with spatial information, maps, census data, place names databases) provide indirect, expert-based/government indicators for boundary identification. Conversely, the direct gathering of primary data through questionnaires, in conjunction with the retrieval of secondary data through media or VGI analysis, provides insights into the perceptions of ordinary people. *Figure 2* illustrates the interdependence of these techniques with methodological approaches, highlighting their (in)occurrence in analysed studies and presenting key patterns – especially secondary data being used predominantly for delimiting regions through territorial identity markers whereas primary data being employed mainly to delimit regions reflecting territorial identity perception.

First, in realised studies, the most prevalent technique is the analysis of literature and spatial information, as it is frequently combined with other techniques in a single study. These data are typically linked to territorial identity discourse, which may involve the integration of previous delimitations of the region by the researcher or an administrative boundary. Alternatively, the data inform research on territorial identity development, particularly when historical boundaries are utilised. A further substantial proportion of the secondary data comprises a variety of database analyses incorporating proper names to identify territorial identity markers. Of these, the most frequently used are chrematonyms, also known as ergonyms. The aforementioned secondary data are considered to be easily adaptable to other regions, whereas others, like warranty cards, are limited to specific countries due to their (non-)availability. The utilisation of VGI analysis has not been extensively employed, apparently due to the higher demand for computer skills; nevertheless, there exists a significant potential for its application. In general, the use of primary data is constrained by its lack of availability and the fact that it takes longer and costs more than using already existing secondary data; despite this, questioning is employed in a substantial proportion of studies. This challenge was frequently addressed by recruiting (geography) students as respondents, though some authors acknowledge the limitations of unrepresentative sampling (Lowry, J. 2013; Bláha, J.D.

and Nováček, A. 2016). A study's reliability may be enhanced by asking the general population, although this may be limited by a lack of geographical education among the respondents. To eliminate these difficulties, real-time (face-to-face or telephone) questioning includes the possibility of guidance for the respondent (which is often needed particularly when utilising a base map). However, this strategy may affect/manipulate resulting data – so it is double-edged.

Second, other techniques, particularly those related to territorial identity markers and territorial identity development, are infrequently applied or may be classified only as applicable. For instance, territorial identity markers combined with media or VGI analysis may serve as alternatives to researchers' field notes, documenting cultural traits in the perceptions of ordinary people. The choice of techniques, however, often depends on the type of secondary data used; in cases involving census data or proper names that can be extracted from various databases, alternative techniques may be more appropriate. A more significant gap in the studies is the lack of attention to temporal dimensions within territorial identity development research – an oversight that hinders building the theory of region as a dynamic process. To address this, future research should emphasise examining the evolution of the population's socio-cultural characteristics, for example, through the analysis of census data. Media and VGI analysis also holds the potential for investigating temporal aspects by filtering data from specific periods.

Third, disconnections exist between data collection techniques and methodological approaches, suggesting that not all techniques can be integrated into all approaches.

Concurrently, this study relates the findings to regions of varying scales demonstrating the applicability of techniques and approaches, whether in the context of a single region or multiple regions (regionalisation) research (see *Figure 3*, or a list of all the regions studied in *Appendix*). First, research on single or multiple regions is balanced, particularly evident below the state scale. At the state scale, existing research slightly favours multiple regions studies, whereas above state scale research tends to focus on single regions. This is related to the fact that research on the de jure territorial shape of a single region such as a state may appear redundant, but this may not always be the right assumption. In terms of techniques, a higher proportion of single region studies occurs at below state scale with the use of directories, gazetteers and other databases analysis, whereas media and VGI analysis and questioning are more frequently applied in multiple region research.

Second, conversely, there is a notable discrepancy in the extent of research conducted on regions of varying scales. The regions that have been the subject of the greatest number of studies are those that are below state scale, with the remaining studies distributed evenly between research on regions at the state scale and on regions above state scale. Similarly, all techniques exhibit an identical representation across scales. However, it is noteworthy that research on regions above state scale employs a greater proportion of primary data than secondary data, although primary data are typically less available. The discrepancy may be attributed to the fact that the utilisation of secondary data necessitates the integration of foreign data sources, which may present linguistic barriers for a researcher, or that the secondary data for above state scale regions may not exist at all. In contrast, collecting primary data may, in fact, be less challenging. For instance, (geography) students may be involved (see above), or collaborations between foreign research institutes may be realised.

This study is intended to encourage the implementation of triangulation design in the social sciences, wherein multiple research methods converge in a single study (mixed research designs) to provide a more nuanced and multifaceted comprehension of territorial identity. The findings demonstrate that many techniques are complementary and, in some cases, methodological approaches

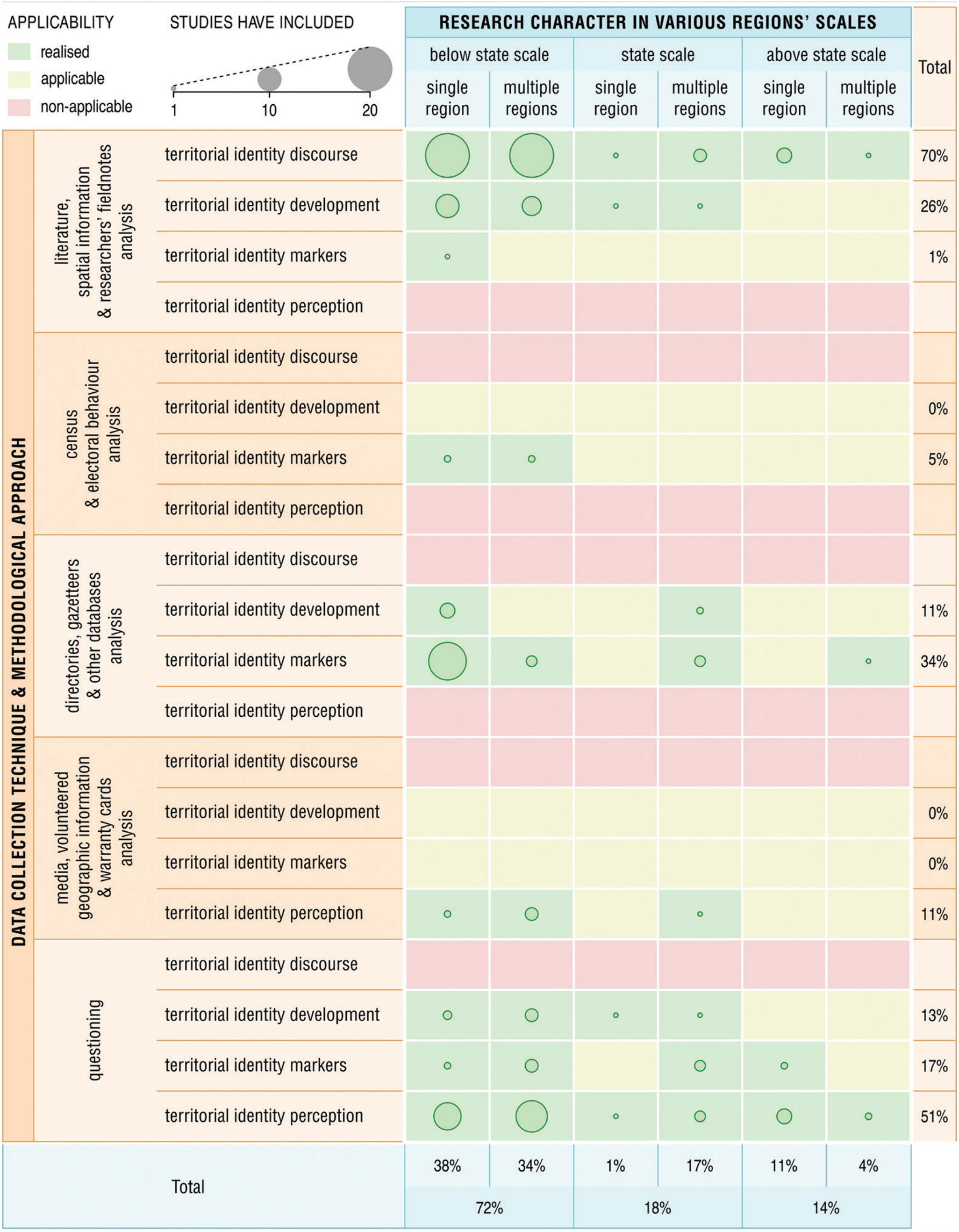

Fig. 3. Interrelationship of techniques with regions under study. *Source*: Authors' own elaboration.

are effectively combined – particularly with a territorial identity discourse (in 59% of all studies). Despite this, the combination of methodological approaches, such as the integration of territorial identity markers with territorial identity perception or territorial identity development, remains a relatively uncommon practice. An exception is, for example, the study by Homanyuk, M. (2019), employing various methodological approaches and data collection techniques for the same research subject (although without a clear description of the research methodology), which helps to put the pieces together into a comprehensive picture of the territorial shape of the region. Upon subtraction of territorial identity discourse, 25 percent of the studies employ two methodological approaches, while all methodological approaches are employed in only 4 percent of the studies. Future research should focus on combining techniques within various methodological approaches while critically examining the interconnectedness of findings. This will help advance both theoretical understanding of territorial identity and its potential applications in fields such as education or regional development.

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Appendix

Name of the region (research area) with country/continent code	Research character in various regions' scale*	Data collection technique combined with methodological approach**	Publications
Kibera city – KEN / AF	∘∘∘	1–A, 4–D	Aadland, M. *et al.* (2016)
Middle East – – / AF, AS, EU	O	1–A, 5–D	Pánek, J. and Šenkeříková, M. (2018); Zaga, M. and Waisel, T.Y. (2023)
Western Saudi Arabia – SAU / AS	∘∘∘	5–C	Alhazmi, J. (2017)
Cyprus – CYP / EU	ooo	1–A, 5–C	Fotiou, C. and Grohmann, K.K. (2022)
Bohemian Paradise – CZE / EU	∘	1–A, 1–B, 5–D	Semian, M. (2012)
Czechia – CZE / EU	∘∘∘ | ooo	1–A, 1–B, 2–C, 5–B, 5–C, 5–D	Chromý, P. *et al.* (2009); Šerý, M. and Šimáček,, P. (2012); Vaishar, A. and Zapletalová, J. (2016); Marek, P. (2020, 2023); Bartůněk, M. and Bláha, J.D. (2023)
Silesia – CZE / EU	∘	1–A, 1–B, 2–C, 5–B, 5–D	Siwek, T. and Kaňok, J. (2000)
Wallachia – CZE / EU	∘	1–A, 1–C	Štika J. (1961)
Southeast Saxony – DEU / EU	∘∘∘	1–A, 1–B	Bartůněk, M. and Bláha, J.D. (2023)
Finland – FIN / EU	o	1–A, 1–B, 5–B, 5–D	Kaisto, V. and Wells, C. (2021)
Midlothian region – GBR / EU	∘	1–A, 3–C	Alani, H. *et al.* (2001)
United Kingdom – GBR / EU	∘∘∘	1–A, 4–D	Jones, C.B. *et al.*(2008); Reinbacher, I. *et al.* (2008)
Croatia – HRV / EU	∘∘∘	1–A, 1–B, 3–C, 5–C, 4–D	Miroševič, L. and Vukosav, B. (2010); Vukosav, B. and Fuerst-Bjeliš, B. (2015, 2016)
Zagora – HRV / EU	∘	1–A, 1–B, 3–C, 4–D	Vukosav, B. (2011, 2015); Vukosav, B. and Fuerst-Bjeliš, B. (2016)
Hogeland – NLD / EU	∘	1–A, 5–D	Stoffelen, A. *et al.* (2024)
Podlasie – POL / EU	∘	1–A, 1–B, 5–B, 5–C, 5–D	Konopski, M. (2021)
Poland – POL / EU	ooo	5–C	Bounds, P. (2015); Stachowski, K. (2017)
Slovenia – SVN / EU	ooo	5–D	Geršič, M. (2017)
Székely Land – ROU / EU	∘	1–B, 2–C	Bartos-Elekes, Zs. (2019)
Podolia – UKR / EU	∘ | ∘∘∘	1–A, 1–B, 5–B, 5–C	Melnychuk, A. and Gnatiuk, O. (2018)
Tavria/Tauride – UKR / EU	∘	***1–A, 1–B, 3–B, 3–C, 4–D, 5–C, 5–D	Homanyuk, M. (2019)

Appendix continued

Name of the region (research area) with country/continent code	Research character in various regions' scale*	Data collection technique combined with methodological approach**	Publications
Ukraine – UKR / EU	ooo	1–A, 1–B, 3–B, 3–C	Melnychuk, A. *et al.* (2014); Gnatiuk, O. and Melnychuk, A. (2019, 2021)
Balkans – – / EU	O	1–A, 5–D	Pleić, T. *et al.* (2021)
Central Europe – – / EU	O	1–A, 5–D	Sinnhuber, K.A. (1954); Bláha, J.D. and Nováček, A. (2016)
Danube – – / EU	O	5–C	Padło, T. *et al.* (2021)
Mediterranean – – / EU	O	1–A, 5–C, 5–D	Staut, M. *et. al.* (2007); Tandarić, N. *et al.* (2013)
Alberta – CAN / NA	∘∘∘	5–D	Montello, D.R. *et al.* (2014)
Appalachia – USA / NA	∘	1–A, 3–C, 5–D	Ulack, R. and Raitz, K. (1981); Weaver, R. and Holtkamp, C. (2015)
Arkansas – USA / NA	∘∘∘	5–D	Good, J.K. (1981)
California – USA / NA	∘∘∘	1–A, 4–D, 5–D	Montello, D.R. *et al.* (2014); Gao, S. *et al.* (2017)
Corn Belt – USA / NA	∘	1–A, 1–B, 3–C	Sublett, M.D. (2021)
Dixie – USA / NA	∘	3–B, 3–C	Reed, J.S. (1976); Reed, J.S. *et al.* (1990); Alderman, D.H. and Beavers, R.M. (1999); Ambinakudige, S. (2009); Andrews, J.R. and Finchum, A. (2020)
Florida – USA / NA	∘∘∘	1–A, 5–B, 5–D	Lamme, A.J. and Oldakowski, R.K. (1982, 2007)
Kansas – USA / NA	∘∘∘	3–C, 5–D	Shortridge, J.R. (1980)
Lehigh Valley – USA / NA	∘ | ∘∘∘	1–A, 5–D	Heath, D.E. (1993)
Louisiana – USA / NA	∘∘∘	1–A, 3–C	McEwen, J.W. (2014)
Michigan – USA / NA	∘∘∘	3–C	Liesch, M. *et al.* (2015)
Midwest – USA / NA	∘	3–C, 5–D	Brownell, J.W. (1960); Shortridge, J.R. (1985)
New England – USA / NA	∘	1–A, 5–D	Lowry, J. (2013)
North America – – / NA	∘∘∘	3–C	Zelinsky, W. (1980)
Northwest – USA / NA	∘	5–D	Lowry, J. *et al.* (2008)
Oklahoma – USA / NA	∘∘∘	5–D	Zdorkowski, R.T. and Carney, G.O. (1985)

Appendix continued

Name of the region (research area) with country/continent code	Research character in various regions' scale*	Data collection technique combined with methodological approach**	Publications
Rocky Mountains – USA / NA	∘	1–A, 3–C	Holtkamp, C. *et al.* (2018)
Santa Barbara city – USA / NA	∘∘∘	1–A. 2–C, 5–C	Phillips, D.W. and Montello, D.R. (2017)
South – USA / NA	∘	3–B, 3–C	Reed, J.S. (1976); Reed, J.S. *et al.* (1990); Ambinakudige, S. (2009)
Southwest – USA / NA	∘	1–A, 3–C	Holtkamp, C. *et al.* (2018)
Texas – USA / NA	∘∘∘	1–A, 5–D	Jordan, T.G. (1978)
The Land of Lincoln – USA / NA	∘	3–C	Colten, C.E. (1997)
Unied States of America – USA / NA	ooo	3–C, 4–D, 5–D	Good, J.K. (1981); Hale, R.F. (1984); Shortridge, J.R. (1987); Alderman, D.H. and Good, D.B. (1996); Edmondson, D. (2018)
Wisconsin – USA / NA	∘∘∘	1–A, 5–D	Hale, R.F. (1983)
Wisconsin's Holyland – USA / NA	∘	5–D	Schlemper, M.B. and Panozzo, K.A. (2020)
Venezuelan Andes – VEN / SA	∘	1–A, 1–B	Price, M.D. (1996)
The World– – / –	OOO	1–A, 5–D	Polonský, F. *et al.* (2010); Didelon, C. *et al.* (2011)

*Research character in various regions' scale: ∘ = below state scale; o = state scale; O = above state scale; ∘ = single region; ooo = multiple regions (regionalisation). **Data collection technique combined with methodological approach: 1 = literature, spatial information and researchers' field notes analysis; 2 = census and electoral behaviour analysis; 3 = directories, gazetteers and other databases analysis; 4 = media, volunteered geographic information and warranty cards analysis; 5 = questioning. A = territorial identity discourse; B = territorial identity development; C = territorial identity markers; D = territorial identity perception. ***Assumed methodology.