

# Analysis of methods and techniques in contemporary electoral geography research in Brazil

## Análise dos métodos e técnicas nas pesquisas da geografia eleitoral contemporânea, no Brasil

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### Abstract

This article aims to classify the methodological procedures used by academic works in the field of Electoral Geography. The studies were classified according to 4 typologies: (i) descriptive and statistical cartographic representation; (ii) spatial quantitative methods; (iii) individual voter behavior and (iv) social logic of electoral behavior. The following categories were added: (v) state of the art / knowledge and (vi) others. To carry out the survey, research was carried out: in the catalog of CAPES theses and dissertations with the term electoral geography and added the filters: temporal from 2016 and areas of knowledge Political Science and Geography; in 63 websites of journals on Geography; on Scielo platform and on Google Scholar platform. The survey resulted in 45 academic papers. It was evident that the distribution of studies is egalitarian between Political Science and Geography. There is a predominance of quantitative methods, especially evaluating the scope of Political Science, while in Geography there is a similar distribution of typologies. We conclude that the diversity of methods is natural in a science with more than a century of history and we suggest research in conference proceedings and research groups for future surveys.

### Keywords:

Voting Geography, Methodologies in Electoral Geography, State of Knowledge.

### Resumo

Este artigo objetiva classificar os procedimentos metodológicos utilizados por trabalhos da Geografia Eleitoral no Brasil e sugerir caminhos possíveis a novas pesquisas do campo acadêmico. Os estudos foram classificados de acordo com 4 tipologias: (i) a representação cartográfica descritiva e estatística; (ii) métodos quantitativos espaciais; (iii) comportamento individual do eleitor e (iv) lógica social do comportamento eleitoral. Foram acrescentadas as categorias: (v) estado da arte / conhecimento e (vi) outras. O artigo apresenta duas etapas: levantamento/classificação e sugestão de possíveis caminhos. Para realizar o levantamento foram feitas pesquisas no catálogo de teses e dissertações da CAPES com o termo geografia eleitoral e acrescentados os filtros temporal, a partir de 2016, e áreas de conhecimento Ciência Política e Geografia em 63 sites de periódicos da área de Geografia, na plataforma Scielo e na plataforma Google Acadêmico. O levantamento resultou em 45 trabalhos acadêmicos. Evidenciou-se que a distribuição dos estudos é igualitária entre as áreas de Ciência Política e Geografia. Há predomínio de métodos quantitativos, avaliando o recorte da Ciência Política, enquanto que em Geografia há uma distribuição semelhante das tipologias. Na segunda etapa sugerimos três possíveis rumos, com o intuito de reduzir algumas lacunas diagnosticadas: o uso de

teorizações que enfoquem no espaço geográfico como causalidade dos resultados eleitorais e a neurociência e os estudos sobre Guerra Híbrida. Concluímos que a diversidade de métodos é natural, em uma ciência com mais de um século de história e sugerimos uma pesquisa em anais de congressos e grupos de pesquisa, para levantamentos futuros.

**Palavras-chave:**

Geografia do voto, Metodologias em Geografia Eleitoral, Estado do Conhecimento.

## I. INTRODUCTION

This article aims to analyze the methodologies adopted in academic studies in the field of Electoral Geography in Brazil. With more than a century of existence, this subdiscipline is still little explored in the country. However, with the increasing availability of electoral data, there is an increase in production (TERRON, 2012); thus, it is fruitful to reflect on the directions of the Brazilian Electoral Geography. However, it is necessary to first briefly expose the trajectory of the academic field and its different methodological approaches, indicating the works that represent milestones in this area.

Electoral Geography is a subdiscipline of Political Geography and is dedicated to the study of the influence that the modes of organization of the space can have on electoral results. Discussing the research field of Electoral Geography, Castro (2015, p. 24, our translation) states that,

If, for politics, democracy is a form of government, for geography the focus shifts to the spaces where it is effectively carried out. From this perspective, a broad field of research is established. The oldest and most consolidated is electoral geography, whose analyses can range from the ballot box to the national scale, revealing the connections between politics and territory, that is, between demands, conflicts, public allocations, the electoral system, and the voter's decision.

Terron (2012) describes the trajectory of the discipline and its different approaches, pointing out the four major methodological lines: (i) the descriptive and statistical cartographic representation of French origin; (ii) spatial quantitative methods resulting from theoretical-quantitative geography, or from the ecological study, from English-speaking countries; (iii) the individual behavior of the voter as the main reason for the electoral dynamics, of American origin; and (iv) the approach of the social logic of the electoral behavior, coming from the American literature amid the movement of contestation of Theoretical Geography, investigates the behavioral factors that influence the decision to vote, relating them to the social-geographical context in which they are inserted. The author describes the approaches in the order in which they have historically emerged.

The pioneering work of the academic field dates from 1913 (republished in 1995), *Tableau politique de la France de l'Ouest sous la Troisième République* by André Siegfried, representing the first typology pointed out by Terron (2012), where the author relates physical characteristics of the soil and social aspects with voting

trends in western France. Siegfried uses a cartographic method grouping values by color or textures to demonstrate the spatial distribution of votes and compares them with demographic and geological maps of France, that is, the author compares maps and correlates the information. With this analysis, he concluded that the social organization of space can provide patterns and explain the electoral result. Vidal de la Blache (1914, p. 261, our translation) praises this study and cites André Siegfried's creativity in dealing with databases and that "[...] a large number of graphs and maps enrich his text, it should be added that they only condense more detailed ideas, which he commented on in lectures given at the Social Museum"<sup>1</sup>. The author points out that his methodology makes an important contribution to the analysis of Political Geography and Political Science, although he considered it deterministic.

A few years later, in 1918, the publication of the work *Geography and the Gerrymander* by the American geographer Carl Sauer was another important contribution to the academic field. Sauer (1918) studied the spatial division of electoral districts for the United States Congress race, combating a practice of manipulating districts to favor candidates, a practice called *gerrymander*. According to Tricky (2017), the expression *gerrymander* is a political jargon that originated in the early nineteenth century and was widely used in the United States, since a vice governor of the state of Massachusetts named Elbridge Gerry modified the electoral circumscriptions to favor his successor – the resulting map did not respect the limits of the counties and had a sinuous and long shape. Opponents denounced the strategy and an illustrator drew – on the limits of the map proposed by Gerry – a monster with lizard's claws and head, resembling a salamander, so *Gerrymander* is the agglutination of the two words. For Cunha and Martins (2017, p. 46, our translation), "The author [Sauer] demonstrated how districts could be organized so that there was a better representation of the electorate within political institutions, without advantages to one territorial cut to the detriment of others".

The second typology originates from the core of the quantitative analysis movement that reached the sciences in the first half of the twentieth century, called the ecological approach, which is markedly focused on mathematical methods of statistical analysis of aggregated electoral and social data. Herbert Tingsten's 1937 work *Political Behavior* is the first ecological study to achieve international prestige. According to Eldersveld (1951, p. 77)

Tingsten analyzes the relationship of sex, age, occupation, and residence to voting, but generalizations are difficult. One is forced to recognize, for example, findings of such dubious value as that voting participation is higher in urban than in rural areas in many countries, with the exception of Estonia, Bulgaria, Switzerland, and Denmark.

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<sup>1</sup> « un grand nombre de graphiques et de cartes enrichissent son texte, il faut ajouter qu'ils ne font que condenser des croquis plus détaillés, dont il a donné le commentaire dans des conférences faites au Musée Social. » (original in French).

Eldersveld (1951) published a dense article in which he analyzes the methodologies used by this methodological approach, classifying the methods used in the studies until then into six typologies: (i) exploratory study of hypotheses testing, where the researcher proposes a hypothesis, collects and organizes information that proves his point of view; (ii) a case study of mass verification, whose objective is to investigate many aspects of an electoral unit without a predetermined hypothesis; (iii) comparative statistical research, in which an attempt is made to describe differences in voting behavior trends in counties, states, or nations; (iv) a single-hypothesis trend study, in which the investigator, advancing a single proposition or an interpretation of an aspect of voting behavior, explores its validity over a considerable period of elections and in many different electoral units; (v) factor analysis of hypothesis testing, systematically organized and pursued but applied to one or some electoral situations in a single community; and (vi) the type of community dynamics, are studies of tabulation and mass registration but also generally proceed based on a defined set of hypotheses, more or less closely related. This methodological line is the most common in studies of electoral geography until nowadays, and its partial use is common in stages of other methodological approaches. In Brazil, we have examples of research that uses spatial statistics, spatial econometrics, and geospatial analysis.

The third and fourth approaches are based on voting behavior, the difference is that one has a psychological (individual) emphasis and the other a sociological (collective) emphasis. This approach focuses on the psychological perspective of the voter, and the first work to gain notoriety was *The American Voter* (CAMPBELL et al., 1960). The method consists of selecting voter profiles and investigating in their trajectory the factors that generated the reasons for the choice of vote in the 1956 American presidential election. For the authors, “The field theoretical alternative is to measure the individual’s party identification at the current time, on the assumption that this is a perfect distillation of all events in the individual’s life history that have borne upon the way in which he relates himself to a political party” (CAMPBELL et al., 1960, p. 34). The authors use a metaphor of the funnel to explain their theory, where in the smaller opening is the factor that is to be explained, the voting behavior of the individual, and towards the larger opening, several factors are found in the history of the people who influenced their decision. For Campbell et al. (1960), it is up to the researcher to follow the path of the funnel as many times as necessary to obtain the relevant facts for explanation. Frequently, research in this line adopts the application of survey questionnaires as a method, followed by cartographic and statistical analyses.

Finally, the fourth social approach to the logic of electoral behavior defends the resumption of the use of the concept of space, which had been secondary until then, and expresses the role of social agents,

institutions, and agencies in influencing the vote on a specific area. The first reference work dates from 1969, Kevin Cox's *The Voting Decision in a Spatial Context*. In this work, Cox defends the concept of the social context of neighborhood. For Johnston (1986, p. 112):

The main source of the hypothesized neighborhood effect in the spatial science literature was a review article by Cox (1969c) on 'The voting decision in a spatial context'. He identified the spatial clustering of voters for particular parties or candidates and suggested, following Hägerstrand's (1967) classic work, that such 'spatial regularities convey a strong suggestion of spatial contagion' (page 85). From then on, he assumed the existence of such contagion and presented his task as providing a valid account for it. He portrayed individual voting behavior as influenced by the information and cues dominant in the voter's area of residence (page 97) and he suggested that this could be accounted for by relating the voting decision of individuals at their location in an information-flow network.

From maps of Wales' election results, Cox identified clusters or independent areas with a clustered pattern of voting in the same party. With this, he evaluated the possible sources of information flows used by the population in their voting decision. As a result, his study demonstrates a difference between the rural areas of Wales – dominated by the Liberal party, with churches opposed to the power of the nobility as their source of information –, and the urban area, dominated by the Socialist Party, where coal mine workers' unions exerted considerable influence on the flow of information (JOHNSTON, 1986). This approach was generated from the movement of contestation of quantitative theoretical geography and is influenced by Marxism. Researchers in this line usually adopt mixed methods, both qualitative and quantitative, in their analyses.

Wusten and Mamadouh (2014) classify this field of Electoral Geography as studies of contextual effects on electoral behavior. The authors consider the works of three researchers to be milestones: Kevin Cox, Ron Johnston, and John Agnew. Johnston's first article is a chapter in Taylor's 1979 co-authored book, *Geography of elections*, entitled *Geographical influences on voting*. The focus of his analysis is on the effects of place on voters (WUSTEN; MAMADOUH, 2014). Agnew gained prominence with the publication of two books, *Place and Politics: The Geographical Mediation of State and Society* (1987) and *Place and Politics in Modern Italy* (2002). Agnew defends a perspective of political activity from a geographer's position, analyzing the influence of the context on election results considering the places but seeing them as units of a totality. For Wusten and Mamadouh (2014, p. 5), "Taking off from where Cox started, Agnew and Johnston have taken somewhat different roads. In the end, they find themselves at positions that are not very far apart and apparently well reconcilable as Johnston indicates by establishing a general viewpoint that uses some of Agnew's main insights".

In the third and fourth approaches, there is an emphasis on what both call "context" influencing electoral behavior. However, while the social approach of the logic of electoral behavior or geographic context has developed around the concept of *place* to explain the context, the approach of individual behavior adopts

[...] a “weaker” contextual notion (O'LOUGHLIN, 2018) commonly used in political science in studies on the neighborhood effect (HUCKFELDT, 1986; JOHNSON; PATTIE, 2006) and on the influence of social media of local communication (HUCKFELDT; SPRAGUE, 1987), where the “context” is understood as the external environment closest to the individual where his/her social relations occur (ZOLNERKEVIC, 2019, p. 190, our translation).

There is a vast literature on Electoral Geography that attributes this division between individual/localized approach versus social/structural focus, being the main schism in the understanding of the subdiscipline between geographers and political scientists. As Flint (2001, p. 145-146) states, “Such an approach is also reflected amongst non-geographers studying social movements who take either a rational choice or institutional approach to locate individual actors within political systems and economics experiences that are placeless”. He adds that “On the other hand, geographers are more concerned about the historic development of particular places and how the ensuing economics institutional and social components of a place structure political action”.

As previously demonstrated, it is clear that the academic field has had, throughout its trajectory, several methodological approaches and a broad international literature, encompassing quantitative and qualitative analyses, whether by geographers or political scientists. However, as Terron (2012) points out, although Electoral Geography is not a new academic field, there are still few publications on the subject in Brazil. Given this, the present study investigates the methodological procedures adopted in a sample of writings about this academic field in the country.

## II. MATERIALS AND METHODS

In view of the trajectory of Electoral Geography in the international literature, a wide variety of methodological approaches can be perceived. The cause of this diversity might be the natural process of a branch of knowledge that, over time, incorporates the scientific tendencies of each historical moment. However, the problem that justifies this study is that the academic production of the discipline in Brazil took place late, with the concentration of research beginning in 2003 (NOGUEIRA, 2020). As all the methodological approaches presented previously are still used today by geographers and political scientists, it is necessary to reflect on how Brazilian production has absorbed, at the same time, methodological procedures developed in different historical times.

A survey of the knowledge produced in the area provides a balance of academic production, contributing to reflections on the development of Electoral Geography in the country. With this, it is possible to point out the focuses and the most addressed themes and analyze the gaps that may exist. Regarding the “state-of-the-art” type of research, we have to:

The interest in “state-of-the-art” derives from the comprehensiveness of these studies to point out paths that have been taken and aspects that are addressed to the detriment of others. The realization of these balances makes it possible to contribute to the organization and analysis in the definition of a field, an area, in addition to indicating possible contributions of research to social ruptures (ROMANOWSKI; ENS, 2006, p. 38-39, our translation).

Regarding the importance of the state of the art in research, the authors also add that

States of the art can represent an important contribution to the constitution of the theoretical field of an area of knowledge, as they seek to identify the significant contributions of the construction of pedagogical theory and practice, to point out the restrictions on the field in which the research is, its dissemination gaps, to identify innovative experiences investigated that point to alternative solutions to the problems of practice and to recognize the contributions of research in the constitution of proposals in the focused area (ROMANOWSKI; ENS, 2006, p. 39, our translation).

For gathering works in the field of Electoral Geography, 63 websites of journals related to the discipline were accessed, without determining the time period and using the term *electoral geography*. At this stage, 13 articles were collected. Considering the possibility of excluding any journal, especially those related to Political Science, a search was carried out on the Google Scholar platform with the same term. Ignoring the results that had already been collected, 11 works were collected. The same procedure was adopted on the Scielo platform and 10 more studies were collected. In the CAPES catalog of theses and dissertations, the search was carried out with the term *electoral geography*, and the following filters were added: from 2016 onwards and the areas of knowledge Political Science and Geography, resulting in 19 works. A total of 53 studies were gathered. After reading the titles, keywords, and abstracts of the academic studies, 8 works were excluded because, although they investigated themes related to Political Geography, electoral studies, or Political Science, they did not deal with Electoral Geography; thus, 45 studies make up the corpus of analysis and are listed in Chart 1.



Chart 1 - List of academic studies gathered in the state-of-the-art.

Authors	Year	Document type	Field of knowledge	Authors	Year	Document type	Field of knowledge
ARAÚJO; ALBUQUERQUE	2018	Journal article	Geography	MONZÓN	2009	Journal article	Geography
AUGUSTO; SILVA	2014	Journal article	Geography	NAVES	2019	Dissertation	Geography
AUGUSTO	2015	Journal article	Geography	OLIVEIRA; NAVES	2021	Journal article	Geography
AUGUSTO	2017	Thesis	Geography	NOGUEIRA	2020	Dissertation	Geography
AVELAR; WALTER	2008	Journal article	Political Science	NOGUEIRA; CHAVEIRO; ALMADA.	2019	Journal article	Geography
BORGES; PAULA; SILVA	2016	Journal article	Political Science	ROCHA	2021	Journal article	Political Science
CARVALHO; SANTOS	2015	Journal article	Economics	RODRIGUES; SANTOS; ALVES.	2014	Journal article	Geography
CUNHA; MARTINS	2017	Journal article	Geography	SILOTTO	2019	Journal article	Political Science
FAGANELLO	2017	Paper presented at the Congress	Political Science	SILOTTO	2016	Dissertation	Political Science
FAGANELLO; FERNANDES	2018	Journal article	Political Science	SILVA	2017	Dissertation	Geography
FERREIRA	2020	Master's dissertation	Political Science	SILVA; SANTOS; SILVA	2022	Journal article	Political Science
GELAPE	2017	Dissertation	Political Science	SOARES; TERRON	2008	Journal article	Political Science
GONÇALVES	2015	Journal article	Political Science	SOARES	2018	Professional Master's Degree Completion Work	Political Science
GONÇALVES	2016	Dissertation	Political Science	SOARES	2019	Dissertation	Geography
GONÇALVES	2021	Thesis	Political Science	TANAKA	2018	Dissertation	Political Science
JUNCKES; SILVA JÚNIOR; SILVA; SILVA	2021	Journal article	Geography	TERENCIANO	2016	Dissertation	Political Science
LIMA; FRAGA; SILVA	2014	Journal article	Geography	TERRON	2009	Thesis	Political Science
MACHADO	2022	Monograph	Geography	TERRON; SOARES	2010	Journal article	Political Science
MADEIRA; SILVA; MALHEIROS	2021	Journal article	Geography	TOLEDO JÚNIOR	2010	Journal article	Geography
MAIA	2015	Journal article	Political Science	ZOLNERKEVIC	2018	Thesis	Geography
MARTINS	2019	Journal article	Geography	ZOLNERKEVIC	2019	Journal article	Geography
MARZAGÃO	2013	Journal article	Political Science	ZOLNERKEVIC; RAFFO	2013	Journal article	Geography

(Source: the authors )

The abstracts of the works were read in order to identify and classify their methodological procedures according to the classification described by Terron (2012) pointed out earlier in this article. Whenever the

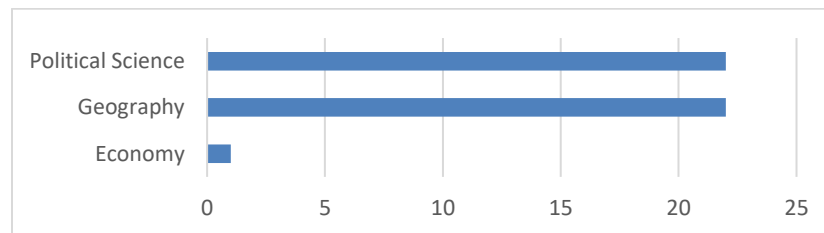


description was insufficient, the sections dedicated to the methodology were read – or the introduction, in cases where the methodological procedures were not in a separate section. The classification was followed by an analysis indicating some notes. The selection of the classic works described in the first part of the present study was carried out through the recurrence with which the authors were cited.

### III. RESULTS AND DISCUSSION

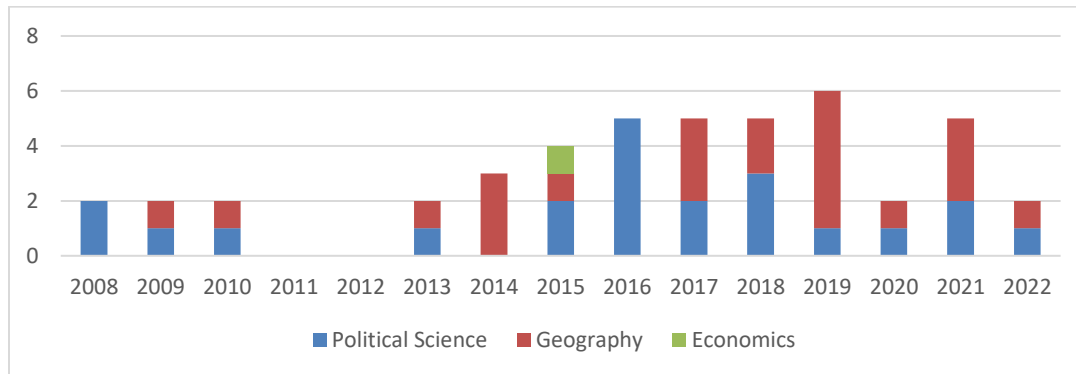
First, it is important to emphasize that Electoral Geography is a subdiscipline shared, mainly, by two fields of knowledge: Political Geography and Political Science. Toledo Junior (2007) identifies that the beginning of this division occurred in the repercussion of the pioneering work *Tableau politique de la France de l'Ouest sous la Troisième République* by André Siegfried. Toledo Junior (2007) reports that André Siegfried's work had a negative repercussion on the geographers' community, including for Vidal de la Blache, who considered it inconsistent and deterministic. However, the study was well received by political scientists in France and other countries who continued using it as a reference. The author adds that "despite being abandoned by French geography, Siegfried ends up being considered the father of French political science. Electoral cartography was the main tool used by Siegfried, and also one of the few working tools of sociologists until 1945, when opinion polls appeared" (TOLEDO JUNIOR, 2007, p. 172, our translation).

As shown in Graph 01, the analysis of the works revealed a balance of studies between the two areas, with 22 works for each.



Graph 01- Area of knowledge of academic works (source: the authors)

However, it should be considered that the selection of studies favored the area of Geography when searching directly in the journals of the discipline; the same procedure was not carried out for Political Science. Regarding the years of publication, the first works were dated 2008 and, since then, it has been showing steady growth until the peak in 2019, followed by a drop in 2020 and a recovery in 2021, as can be seen in Graph 1.



Graph 1 - Distribution of studies by years (source: the authors)

Although some studies from the 1970s and 1980s have, in some way, worked with the concepts of Electoral Geography in Brazil, Toledo Junior (2007) refers to the work *Geografia Política e Geopolítica* by Wanderley Messias da Costa, from 1992, as the one that first raised the discussion of Electoral Geography. This author indicates that the theme reappears a decade later, in 2002, in the research group coordinated by Maria Adélia Souza, who published the work *Território, Lugar e Poder: A expressão territorial do voto no Ceará*. With this, it can be seen that it is a relatively recent field in the country.

Until then, studies in Brazil focused on proposing more appropriate districting for elections, using methods of ecological focus. However, Nogueira (2020) points Barry Ames's *Os entraves da Democracia no Brasil* and Nelson Rojas de Carvalho's *E no início eram as bases – Geografia política do voto e comportamento legislativo no Brasil*, both from 2003, as the beginning of studies in contemporary Electoral Geography.

Considering the trajectory of academic productions, there may be a reason for the late appearance of publications. It is hypothesized that democratic periods are necessary for the development of the subdiscipline so that there are elections and data transparency and researchers have sources for their research. Thus, the dictatorial periods in the twentieth century and the public availability of electoral data by the TSE (Superior Electoral Court) only from 1998 onwards may have contributed to the low academic production until the 2000s.

Monzón (2009) analyzes the scenario of Electoral Geography in Argentina and points out the same scarcity of bibliography in the country, but the author shows other possible causes for the situation.

It is unclear why electoral geography in Argentina has so few scientists dedicated to this subject. The main difficulty is the scarcity of theoretical frameworks and the absence of consensus on the techniques to be used to carry out an electoral study with a geographic focus that does not move away from the geographic space<sup>2</sup> (MONZÓN, 2009, p. 125, our translation).

<sup>2</sup> “Es poco claro por qué la geografía electoral en el ámbito argentino tiene tan pocos científicos dedicados al tema. Se puede aludir como principal elemento de dificultad la escasez de marcos teóricos y la ausencia de consenso en las técnicas a utilizar para llevar a cabo un estudio electoral centrado en lo geográfico y que no se aleje del espacio geográfico” (original in Spanish).

We agree with Monzón's (2009) position on the variety of methodological approaches. The same Argentine scenario is repeated in Brazil, with few researchers following different methods. The methodological procedures were classified according to the typology suggested in the first part of this article, based on the work of Terron (2012). The result is shown in Table 1.

Table 1 - Classification of research according to the typology of methodological procedures

Approach	Field		
	Political Science	Geography	Economics
Choroplethic cartographic	3	5	
Statistics of Aggregate Data	16	4	1
Individual behavior		5	
Social Logic of Voting Behavior	2	5	
State-of-the-art / knowledge	1	1	
Other		2	
<b>TOTAL</b>	<b>22</b>	<b>22</b>	<b>1</b>

(Source: the authors)

First of all, it is necessary to clarify that it is unlikely that an academic work will completely fit into a typology. The classification established here takes into account only a margin of approximation with the ideal typologies. It is important to emphasize that most of the authors of this survey sign more than one academic paper, in general, because they produced monographic publications from graduate courses followed by articles on the development of the research, or its continuation to higher levels of graduate studies.

The predominance of quantitative methodologies is noted, especially when considering only the area of Political Science, where 19 of the 22 works use quantitative cartographic methods or, most of them, statistical analysis of aggregated data. The work in the area of Economics also fits into this last typology. However, there is still much to explore in this field in Brazil; the "icebergs" of unexplored data pointed out by Terron (2012) are an example, as well as the methodological errors of ecological research concerning the geographic dimension of Brazilian elections cited by Marzagão (2013). When discussing such misconceptions, Gonçalves (2015) states that the proper use of geospatial analysis and spatial statistics has been more common in developed countries, especially the United States, and that "in short, in Brazil, studies in this area are restricted only to the quantification of votes on electoral maps, being much more an electoral cartography than an analysis of a spatial pattern" (GONÇALVES, 2015, p. 368, our translation).

In Geography, the works are equally distributed among the proposed typologies, with a slight decrease precisely in the most abundant typology in Political Science. A differential of the area is the attempt to apply

theoretical concepts of the discipline, such as territory, power, and place, from the perspective of Electoral Geography in the typology classified as *other*. The two works in this category are essays that propose the use of concepts for analysis in Electoral Geography. Both in Political Science and in Geography, there is a state-of-the-art/knowledge study, but the work of Political Science deals with methods aimed at the quantitative statistical theoretical bias, while that of Geography advocates for the model of systemic analysis framed in the focus of individual or behaviorist behavior.

In an interesting article, Azevedo (2023) carries out a narrative literature review to analyze the national production in Electoral Geography, comparing it with the international one. Azevedo (2023) develops a fruitful analysis of the works in his review, whose titles, although obtained by a methodology different from that of the present study, correspond to several works that were also analyzed here. Unlike this study, which is limited to the description of the methods used in national academic production, Azevedo (2023) carries out a broader approach, discussing the theoretical bases that mobilize researchers in the field. One of the great contributions of his article is the reflection of the dichotomy of the view of the role of geographic space as a compositional effect versus the focus of the contextual effect that, to a large extent, explains the positions taken by geographers and political scientists. Roughly speaking, the defenders of the first group understand that the differences in spatial voting patterns are due to the profile of the people who inhabit these areas, while the adherents of the second group credit the social context of the places for influencing their inhabitants (AZEVEDO, 2023). The author concluded that, in the national literature, there is a gap in research that addresses space as a contextual effect and believes that this fact is due to the low participation of geographers in research in the subdiscipline.

By reading the studies, it can be seen that some of the works understand electoral analysis focused on space not as an independent discipline with a theoretical and methodological framework, but rather as the result of a methodological procedure, usually related to the mapping of votes. In these cases, the authors usually use the term *geography of voting*: “[...] Then, the ‘geography of voting’ and the career trajectories of each metropolitan deputy will be confronted in order to assess the logical relationship between these aspects” (ROCHA, 2021, P. 587, our translation). There are also cases in which this term is used as a designation of a quantitative method within the subdiscipline. Nogueira et al. (2020) state that the geography of voting, which is inserted as a part of the Electoral Geography, works as a method of quantification and proposes to carry out the ‘mapping of votes and their spatial analysis’. However, it should be noted that in most academic works, the

terms *electoral geography* and *geography of voting* are treated as synonyms and both are understood as a separate area of knowledge.

As demonstrated in several studies consulted (AZEVEDO, 2023; GONÇALVES, 2021; TERRON, 2012), there are gaps between national academic production compared to international academic production; there is an underrepresentation of geographers in the ranks of Electoral Geography and a delay in thematic approaches important in current times, such as the connection between electoral results and the use of social networks. Therefore, in addition to pointing out the gaps demonstrated by the research, we suggest possible paths that can be worked on in future research that can mitigate this distancing<sup>3</sup>.

There is much to be explored about the adoption of the conceptual theoretical framework of Geography in the analysis of Electoral Geography, bringing to light the role of geographic space as a dominant factor in explanations and theorizations, and not only as the scenario in which voting patterns are delimited and segregated. Regardless of the research method, analyses that contemplate concepts that have been worked on for a long time in the subdiscipline, such as the friends and relatives effect, localism, neighborhood effect, etc., can be adopted in conjunction with the theoretical baggage of the various schools of thought. The analysis of the organization and spatial distribution of political parties, the uses of new technologies, and the relationship between social demands and localized thematic, and electoral results in these locations are also pertinent themes. Other aspects, such as those related to the architecture of the Brazilian Federation, legal issues that affect political parties, and social, racial, religious, and gender characteristics are relevant aspects for the area. In this way, one could achieve what Azevedo (2023) calls strong Electoral Geography, that is, where geographic space is positioned as a causal effect.

We also propose the possibility of increasing the four classical approaches defined by Terron (2012) and described in the first part of this study, as a way of updating the debate, by adopting two more lines of research that developed in the last two decades in Political Science and that are still little explored in Electoral Geography: Neuropolitics and Hybrid War.

According to Lavareda (2011), Neuropolitics is a branch of study dedicated to investigating the non-rational processes that lead individuals to make political decisions. Its methods involve the use of specialized medical equipment that monitors brain activities, applied to groups of people who are exposed to stimuli of an electoral nature, such as photos of candidates, and party flags, among others. Neuropolitics proves to be an

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<sup>3</sup> We are grateful for the valuable contributions of the anonymous reviewer who made these notes, indicating the new fields of electoral studies that are still scarce in Electoral Geography.

interesting path because, although it is based on the individual sphere, it moves away from explanations anchored in actions taken following absolute rationality – so it would be a rich contribution to research on the impacts of political campaigns, the motivation that leads to the voting pattern in different regions or even to understand the moments of ideological polarization. A work that has gained great notoriety in the field of Neuropolitics is the book *The Political Mind*, by George Lakoff, published in 2009.

The Concept of Hybrid War has already been worked on in Geography and Political Science, however, there is still a lack of the theme in Electoral Geography. Developed in 1998 by the American theorist Robert G. Walker and popularized in 2007 with the publication of Frank Hoffman's *Conflict in the 21st Century: The Rise of Hybrid Wars*, the concept of Hybrid War is an adaptation of geopolitical theorization, political science, and military studies to the new global scenario that emerged from the fall of the Berlin Wall and has been consolidating in the twenty-first century (COSTA; TEIXEIRA, 2021). Hybrid War explains how conflicts are fought today, in which States no longer have a monopoly on military force and are caught up in paramilitary groups in insurgencies, often operated from distance by their opponents, even using informational warfare, notably the use of social networks. According to Costa and Teixeira (2021), the logic proposed by Hybrid War fits perfectly into this reality (of informational warfare), in which social networks can replace the role of bombs and bullets, aiming at assimilation and integration and not the destruction of the target. Thus, this can be an interesting way to address the problem of the use of social networks in elections – especially when mixed with methodologies such as netnography, webmetry, content and social media analysis (BERNARDES et al., 2022).

#### IV. CONCLUSION

Although the academic field is still little explored, the survey of methodological procedures in Electoral Geography revealed a diversity of typologies that are adopted by Brazilian researchers, especially in the area of Geography where there is an equal distribution concerning the use of different methodologies, while in Political Science there is a predominance of quantitative methodologies. We understand that this scenario is a natural movement for a discipline with more than a hundred years of existence since the sciences often end up absorbing the tendencies of each historical time and incorporate them into their theoretical-methodological framework in the form of different currents of thought.

We understand that the field of research in Electoral Geography is still little occupied by geographers, a fact that provides a distance from conceptualizations of the geographic space as a causal factor of electoral

patterns. We hope that the indications of paths for investigations can contribute to the studies of researchers in Electoral Geography.

We suggest, for future studies on methodological procedures in Electoral Geography, that the journals of Geography and Political Science should be considered as equally essential sources because both areas make important contributions to Electoral Geography. In addition, it is important to resort to papers published in conference proceedings and research groups, because, given the incipience of studies in the area, maybe more publications can be found in these environments. Considering that this type of publication requires more simplified conditions for submission compared to monographs or articles, researchers can publish excerpts of their research even if they have not yet completed their study.

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