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*Artículos científicos*

## **Elecciones a gobernador en Tlaxcala 2021: análisis espacial del voto**

*Governor Elections in Tlaxcala 2021: Spatial Analysis of the Vote*

*Eleições para governadores em Tlaxcala 2021: análise espacial do voto*

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### **Resumen**

El triunfo en la gubernatura de la coalición Juntos Haremos Historia en Tlaxcala, encabezada por los partidos Morena, Partido del Trabajo (PT), Verde Ecologista de México (PVEM), Nueva Alianza Tlaxcala (Panalt) y Partido Encuentro Social Tlaxcala (PEST), introdujo nuevamente en la entidad una alternancia política, después de que el Partido Revolucionario Institucional (PRI) resultara ganador en las elecciones de 2010 y 2016. Para este trabajo se indaga en la espacialidad del voto de los comicios a gobernador, la cual presenta dependencia espacial, registrada desde los comicios de 1998. Metodológicamente, se realiza un análisis exploratorio de datos electorales por municipio. También se presenta de manera muy somera el contexto local de la elección, dado que Lorena Cuéllar Cisneros,



segunda mujer en ocupar la principal figura a nivel local, representa la última generación de la élite política local formada en las filas del PRI.

**Palabras clave:** comportamiento político, elecciones, geografía regional.

### Abstract

The victory in the governorship of the Juntos Haremos Historia coalition in Tlaxcala, headed by the Morena parties, Partido del Trabajo (PT), Verde Ecologista de México (PVEM), Nueva Alianza Tlaxcala (Panalt) and Partido Encuentro Social Tlaxcala (PEST), introduced again in the entity a political alternation, after the Partido Revolucionario Institucional (PRI) was the winner in the 2010 and 2016 elections. For this work, the spatiality of the vote in the gubernatorial elections is investigated, which presents spatial dependence, registered since the 1998 elections. Methodologically, an exploratory analysis of electoral data by municipality is carried out. The local context of the election is also briefly presented, given that Lorena Cuéllar Cisneros, the second woman to occupy the main figure at the local level, represents the last generation of the local political elite formed in the ranks of the PRI.

**Keywords:** political behavior, elections, regional geography.

### Resumo

A vitória no governo da coalizão Juntos Faremos História em Tlaxcala, liderada pelos partidos Morena, Partido Trabalhista (PT), Ecologista Verde do México (PVEM), Nova Aliança Tlaxcala (Panalt) e Encontro Social Tlaxcala (PEST), reintroduziu uma alternância política na entidade, após o Partido Revolucionário Institucional (PRI) ter sido o vencedor nas eleições de 2010 e 2016. Para este trabalho, investiga-se a espacialidade do voto nas eleições para governador, que apresenta dependência espacial, registrada desde as eleições de 1998. Metodologicamente, é realizada uma análise exploratória dos dados eleitorais por município. O contexto local da eleição também é brevemente apresentado, uma vez que Lorena Cuéllar Cisneros, a segunda mulher a ocupar a principal figura em nível local, representa a última geração da elite política local formada nas fileiras do PRI.

**Palavras-chave:** comportamento político, eleições, geografia regional.



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## Introduction

This work undertakes an exploratory analysis of spatial data whose space variable transitions from descriptive to explanatory, and takes into consideration that, in the case of the gubernatorial elections in Tlaxcala, a spatial dependency has been detected since 1998. The premise is that the phenomenon of voting, seen through electoral participation (PE), does not have a random distribution, that is, it is not the result of a random process. For the treatment of electoral data, the GeoDa software was used, disaggregated at the municipal level.

Although the exploration of socioeconomic variables, as well as the analysis of the rest of the positions, has been a pending issue in Tlaxcala for a couple of years, spatial studies with electoral data at the local level have begun to be registered in different academic forums, despite the challenges in the accessibility and validity of the information. The works on the spatial analysis of the vote help to explain the electoral situation of each electoral process, the evolution of political trends, the characteristics of the local party system, as well as the georeferencing of electoral behavior in the region.

One of the challenges mentioned, for example, are the information gaps that arise in the compilation of electoral results. For this election, blank rows were found in some sections of 11 municipalities. The cases were: Calpulalpan (section 80, 91), Chiautempan (section 124, 126, 137, 139,157), Huamantla (section 179, 213, 217), Tepetitla de Lardizábal (section 291), Sanctórum de Lázaro Cárdenas (section 293) , Nanacamilpa by Mariano Arista (section 302, 302, 304), Nativitas (section 325), Tetlatlahuca (section 424, 652), Zitlattepec by T.S.S. (section 525), Papalotla de Xicohtécatl (section 562, 566) and La Magdalena Tlaltelulco (sección 155).<sup>1</sup>

The elections in Tlaxcala for the position of governor in 2021 meant a victory for Morena and the coalition complemented by the Labor Party (PT), the Green Ecologist of Mexico (PVEM), the New Tlaxcala Alliance (Panalt) and the Tlaxcala Social Encounter Party (PEST). ) with Lorena Cuéllar Cisneros as her candidate. In total, six candidates and one candidate at the head of coalitions and political parties (competing for the first time)

<sup>1</sup> La información del dato electoral a nivel sección solicitada al Instituto Tlaxcalteca de Elecciones tenía la leyenda “Las filas en color rojo corresponden a los paquetes electorales que por algún motivo no fueron recibidos en los Consejos Distritales”.



led the main application in the entity. Regarding the latter, 10 political parties had national registration and five had local registration.

In the first part of this work, a brief analysis of electoral geography and spatial analysis is presented. The main mark of this approach is the use of the concept of region and space; that is, descriptive variable (region as container) and explanatory variable (space that impacts). In the second part of the work, the findings of the exploratory analysis of the data of the 2021 governor election in Tlaxcala at the municipal level with the Moran index (1948) and the local association index (LISA) are presented. , based on the vote understood as PE and the partisan preference of the two coalitions (Partido Revolucionario Institucional [PRI] and Morena). The third section presents the electoral results and a brief account of the context of the contest. Finally, it concludes with some very general reflections, given that this investigation is still in progress.

### **Electoral geography and spatial analysis**

Electoral geography studies the phenomenon of voting based on aggregate data and considering the region as the social container, that is, the place where voting takes place. Peschard (1995, cited in Gómez and Valdés, 2000) defines it as follows:

Cartographic method to describe the regional distribution of partisan forces, which makes it possible to identify the evolution of political trends both in the areas where a party is rooted and in the areas of change in the political orientation of the electoral (p. 19).

But it would be the contributions of Cox (1969, 1987), from political geography, that would promote the local context, considered an important element in the interpretation of voter decisions (Cox, 1969, cited in Broner, 2009), as well as well as economic conditions and local political affairs (Cox, 1987, cited in Vilalta, 2008b).

The author Broner (2009) comments that many authors have accepted that voters are influenced as much by their immediate social and geographical environment as by their individual situation (Flint, 1995), while others have remained skeptical (King, 1996). To the list of works on the subject, Hernández (2015) identifies several investigations on the relationship between elections and space:



On this subject, we find a wide variety of works that explicitly seek to explore the hypothesis of the non-randomness of electoral results. (Ward *et al.*, 1996; O'Loughlin, 2002, 2003; Darmofal, 2006; Klos, 2008; Tam Cho & Nicley, 2008; Soares & Terron, 2008; Chen & Rodden, 2009; Seabrook, 2009; Lefebvre & Robin, 2009; Cutts & Webber, 2010; Sue Wing & Walker, 2010; Rodden, 2010; Crespín, Darmofal & Eaves, 2011) (p. 186).

In our country, Vilalta (2004, 2006, 2007, 2008b) and Lizama (2012) would be the ones who incorporate the theoretical and methodological discussion of the so-called spatial analysis. Since then, its analysis and application in social phenomena has begun to be integrated more frequently (Garrocho, 2016).

Although Vilalta (2006) himself comments that the use of the techniques was due in part to the following:

1) The diffusion in the use of geographic information systems (GIS), 2) the advances of the government to facilitate the public availability of updated statistical information and time series, and 3) the popularization of surveys and maps in sociodemographic matters, economic and political (p. 2).

Said author argues that during the 1950s some journals began to discuss the matter (Moran, 1948, 1950, cited in Vilalta, 2006), but it was not until the 1980s and 1990s that the discussion was systematic in the academic literature (Anselin, 1988; Anselin and Griffith, 1988; Cliff and Ord, 1981; Flint, 1995; King, 1996; O'Loughlin and Anselin, 1991, all cited in Vilalta, 2006).

The methodology proposed from spatial econometrics is mainly due to the work of Anselin (1995), as well as the tools developed in the GeoDa Center for Geospatial Analysis and Computation,<sup>2</sup> which has contributed to the improvement and dissemination of algorithms for spatial analysis, such as the Moran index (1948) and LISA.

Vilalta (2006) clarifies that in the spatial analysis the use of the concepts autocorrelation and spatial dependence:

They mean the same thing, but the difference in the use of words is that the first term refers simultaneously to a phenomenon and a statistical technique, and the second to a theoretical explanation. Specifically, spatial dependence exists when “the value of the dependent variable in a spatial unit is partially

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<sup>2</sup> Para más información sobre centro visite: <https://spatial.uchicago.edu/>

a function of the value of the same variable in neighboring units” (Flint, Harrower and Edsall, 2000: 4). This occurs for a theoretically important reason that summarizes Tobler's (1970) first law of geography: "Everything is related to everything, but things that are closer are more related than things that are distant." (p. 91).

The description of the concept of autocorrelation by the authors Siabato and Guzmán (2019) helps to understand its usefulness in electoral analysis:

The essence of autocorrelation is to analyze the variability of a phenomenon through geographic space to determine spatial patterns and describe its behavior, that is, it can be understood as the means to understand how the phenomenon is distributed in the analyzed space and to what degree. local elements can be affected by their neighbors (p. 2).

For Sonnleitner (2013), the reflection on the individual and collective link that we as citizens have at the time of exercising universal suffrage, as well as the methodological tools provided by the disciplines of geography and cartography for the disaggregation of electoral data in different scales, are some of the substantial attributes that these works present. As a paraphrase: we vote like our neighbors. Likewise, she recognizes that the spatial analysis with electoral data contributes to the characterization of the region and micro-region in terms of territorial dynamics, concentration, fragmentation and spatial dispersion, among other characteristics.

Of more recent dates are the works of the study of the electoral geography of Charles, Torres and Colima (2018), who investigate the relationship between ideology and space.

### **Regional analysis with electoral data**

In recent years, efforts to highlight the region variable have been notorious in electoral studies. In the words of Vilalta (2004): "For Mexico it is evident that the local or regional context is decisive for the vote" (p. 86).

At the regional level, for the case of Tlaxcala, the work of González (1994) was the first document to outline an electoral geography based on indicators such as the behavior of the variables of participation and electoral abstention for the entity as a whole, according to the federal, local and municipal electoral results between 1979 and 1992, as well as the



degree of consistency of the party system in the entity and the correlation between the electoral weight of the parties and the municipal socioeconomic development.

However, since 1998, when the first political alternation took place in the gubernatorial elections, the study of regional electoral analysis has been examined considering the region as a descriptive variable and space as an explanatory variable. This has made it possible to georeference electoral preference following the strict sense used as a synonym for voting (Anduiza and Bosch, 2004, p. 28), as well as some electoral indicators.

For the case that concerns this work, an exploratory analysis of spatial data from the 2021 elections in Tlaxcala is presented with the aim of explaining the spatial effects through techniques that "allow describing spatial distributions, identifying atypical locations (spatial outliers) , discover spatial association schemes (spatial cluster) and suggest spatial regimes or other forms of spatial instability (Moreno and Vayá, 2000, p. 29). It should be noted that it was Vilalta (2008) who adapted the concept of electoral cluster to electoral units (states, municipalities, delegations) with similar electoral results and the concept of electoral outlier to the set of electoral units with different results in relation to their counterparts. neighbours.

The spatial data exploration was carried out under the premise that the vote, understood through the EP and the political preference for a political party or coalition, does not have a random distribution:

- $H_n$ : There is a spatial behavior of the vote.
- $H_a$ : There is independence between the vote and the space.

Now, the Moran index (1948) is the statistic that measures the existence or absence of dependency or spatial autocorrelation of a variable, whose values range between 1 and -1 (positive and negative autocorrelation), respectively, while the value 0 indicates the existence of random spatial patterns of the variable. "That is, the value that a variable takes in a region is not only explained by internal conditioning factors but also by the value of that same variable in other neighboring regions" (Moreno and Vayá, 2000, p. 21)

His formula is expressed as follows:

$$I_i = \frac{N \sum_{i=1}^N \sum_{j=1}^N w(i,j) (x_i - \bar{x})(x_j - \bar{x})}{\sum_{i=1}^N (x_i - \bar{x})^2}$$



As:

- $N$ : number of geographic units on the map (municipalities)
- $W_{ij}$ : distance matrix that defines if geographic areas  $i$  and  $j$  are contiguous or not.

not.

The Moran's index coefficient is fitted to the statistical significance test of  $Z$  values, assuming a normal distribution. The decision rule to validate the research hypothesis from the Moran index is as follows:

- $H_n: I = 0 \rightarrow H_n$ : Moran's global coefficient ( $I$ ) is equal to zero, so there is no spatial autocorrelation, rather a random distribution of the voting phenomenon is observed.
- $H_a: I \neq 0 \rightarrow H_a$ : Moran's global coefficient ( $I$ ) is not equal to zero, so there is spatial autocorrelation of the voting phenomenon.

Next, the Moran index is presented according to the neighborhood criteria. Of these, the queen criterion was decided in this work (table 1). Table 2 shows the four quadrants of the Moran scatterplot. Table 3 presents the results of the Moran index from 1998 to 2021, detailing the spatial autocorrelation of the vote with a negative trend.

The dispersion diagrams of the EP and the political preference by political party are shown below (figure 1). The georeferences according to the quadrants of the Moran index are also shown (figures 2, 3 and 4).

**Tabla 1.** Criterios de contigüidad física en una cuadratura regular

Criterio de vecindad	Número total de vecinos	Definición
Criterio torre o <i>rook</i>	4	Serán vecinos de $i$ las regiones que comparten algún lado con $i$ .
Criterio alfil o <i>bishop</i>	4	Serán vecinas de $i$ las regiones que comparten algún vértice con $i$ .
Criterio reina o <i>queen</i>	8	Serán vecinas de $i$ las regiones que comparten algún lado o vértice con $i$ .

Fuente: Moreno y Vayá (2000, p. 24)



**Tabla 2.** Diagrama de dispersión del índice de Moran

II Bajo-alto	I Alto-alto
III Bajo-bajo	IV Alto-bajo

Fuente: Elaboración propia

**Tabla 3.** Índice de Moran (W-reina)

Año	PE	PAN	PRI	PRD	Morena
1998	0.0714	0.0152	-0.1416	-0.0898	
2004	-0.0749	-0.0513	-0.0546	-0.1311	
2010	0.0776	-0.1195	-0.0589	-0.0183	
2016	-0.0174	-0.1121	-0.1362	-0.0412	
2021	0.1102		-0.1708		-0.1299

Fuente: Elaboración propia

Table 3 presents the results of the Moran index from 1998 to 2021 for both EP and political preferences. As can be seen, there is none equal to zero; that is, the existence of spatial autocorrelation of the vote with a negative trend is statistically verified and, given that the data does not reach<sup>3</sup> the expected significance (0.05), the phenomenon of the vote analyzed from spatial econometrics does not allow advancing to the second phase, that is, proposing a spatial econometric model.

Therefore, only the relationship between what happens at a point in space and another place is demonstrated. A. Knowing that spatial dependence "occurs when the values observed in a region depend on the values of neighboring regions" (Agudelo, 2010, p. 15), and since it is negative here, it means that the presence of an attribute hinder their neighborhoods.

The circles in each quadrant (figure 1) represent the municipalities observed according to the neighborhood criterion used, which for this exercise was the queen

<sup>3</sup> Solo se presenta en los años 1998 y 2010 con la variable de PE.

criterion (table 1). The reading of the quadrants (table 2) means, according to the variable in parentheses: first quadrant with high locality (PE) with high neighbors (PE); second quadrant with low locality (PE) with high neighbors (PE); third quadrant with low locality (PE) with low neighbors (PE), and fourth quadrant with high locality (PE) with low neighbors (PE). And the same for political preferences, PRI+ and Morena+. Figures 2, 3 and 4 show the municipalities according to the dispersion quadrants and table 4 shows their description.

Regarding the LISA, it identifies in a cartographic way the spatial local dependency from the Moran index. (Lizama, 2012, p.19). Its formula is expressed as follows:

$$I_i = \frac{(x_i - \bar{x}) \sum_j w_{ij} (x_j - \bar{x})}{\sum_i (x_i - \bar{x})^2 / n}$$

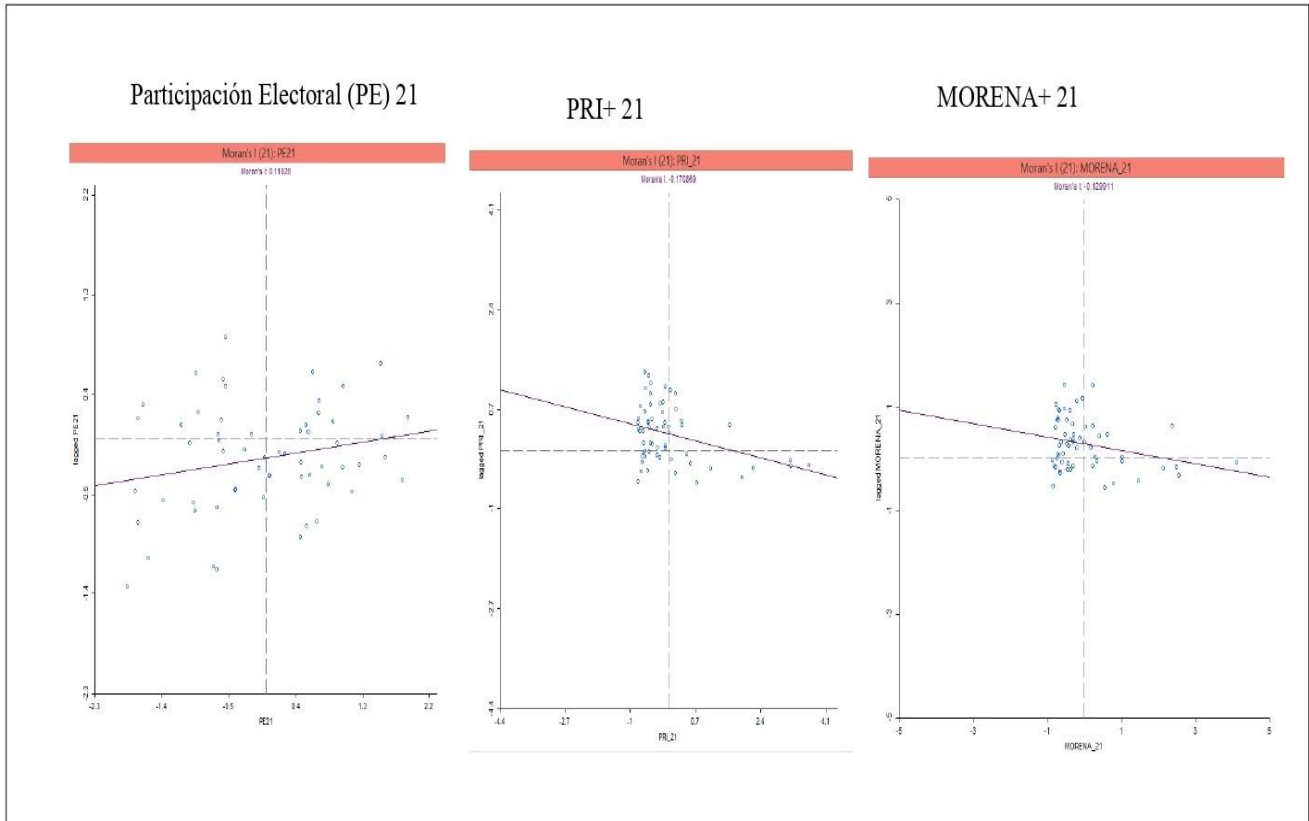
As:

- $n$ : Number of municipalities on the map.
- $W_{ij}$ : Distance matrix that defines if geographic areas  $i$  and  $j$  are contiguous

or not.

The Moran's index coefficient is fitted to the statistical significance test of Z values, assuming a normal distribution. Figure 5 shows the electoral agglomerations, according to the type of neighborhood selected, whose description is presented in table 5.

**Figura1.** Diagrama de dispersión de Moran, 2021



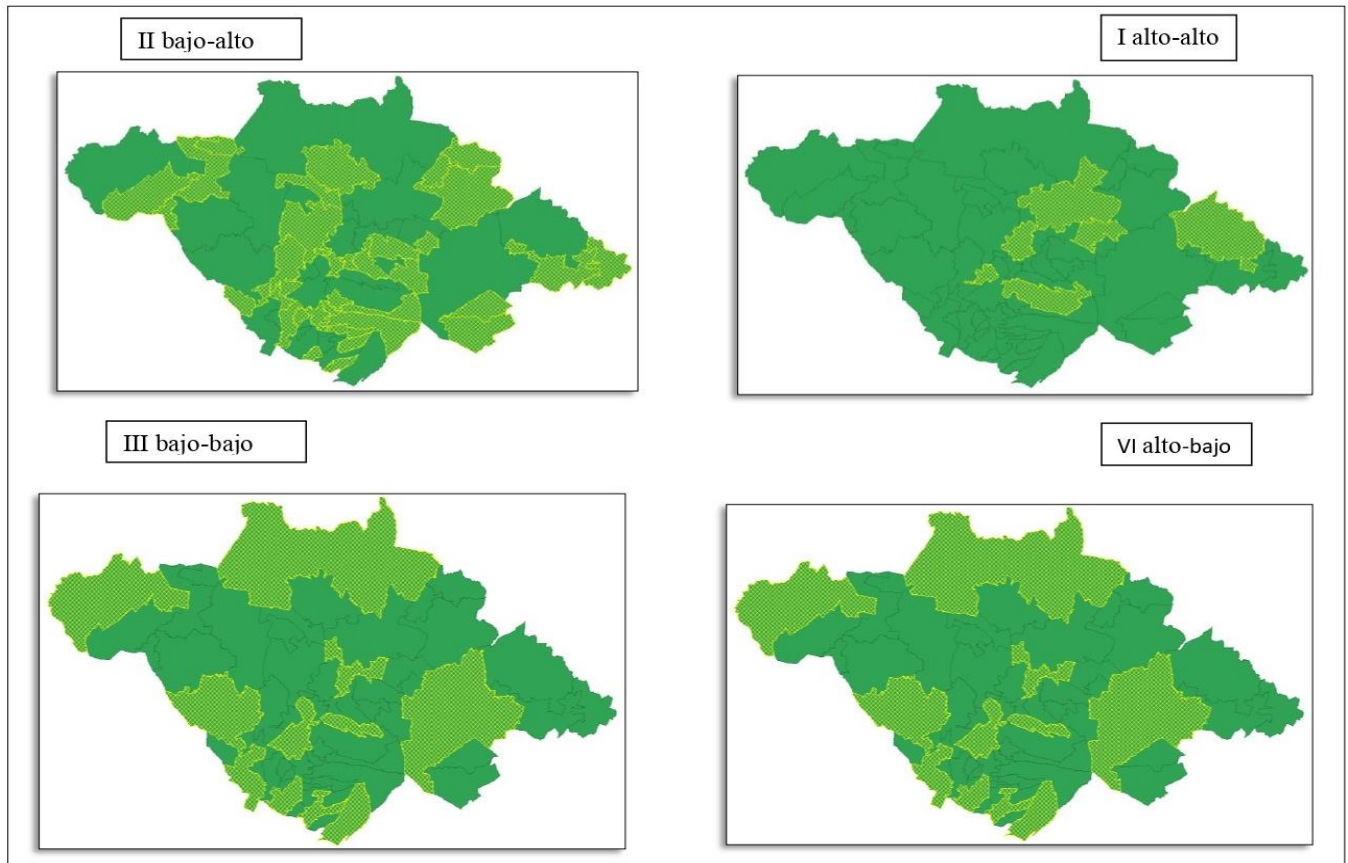
Fuente: Elaboración propia

Figura 2. Municipios de PE, 2021



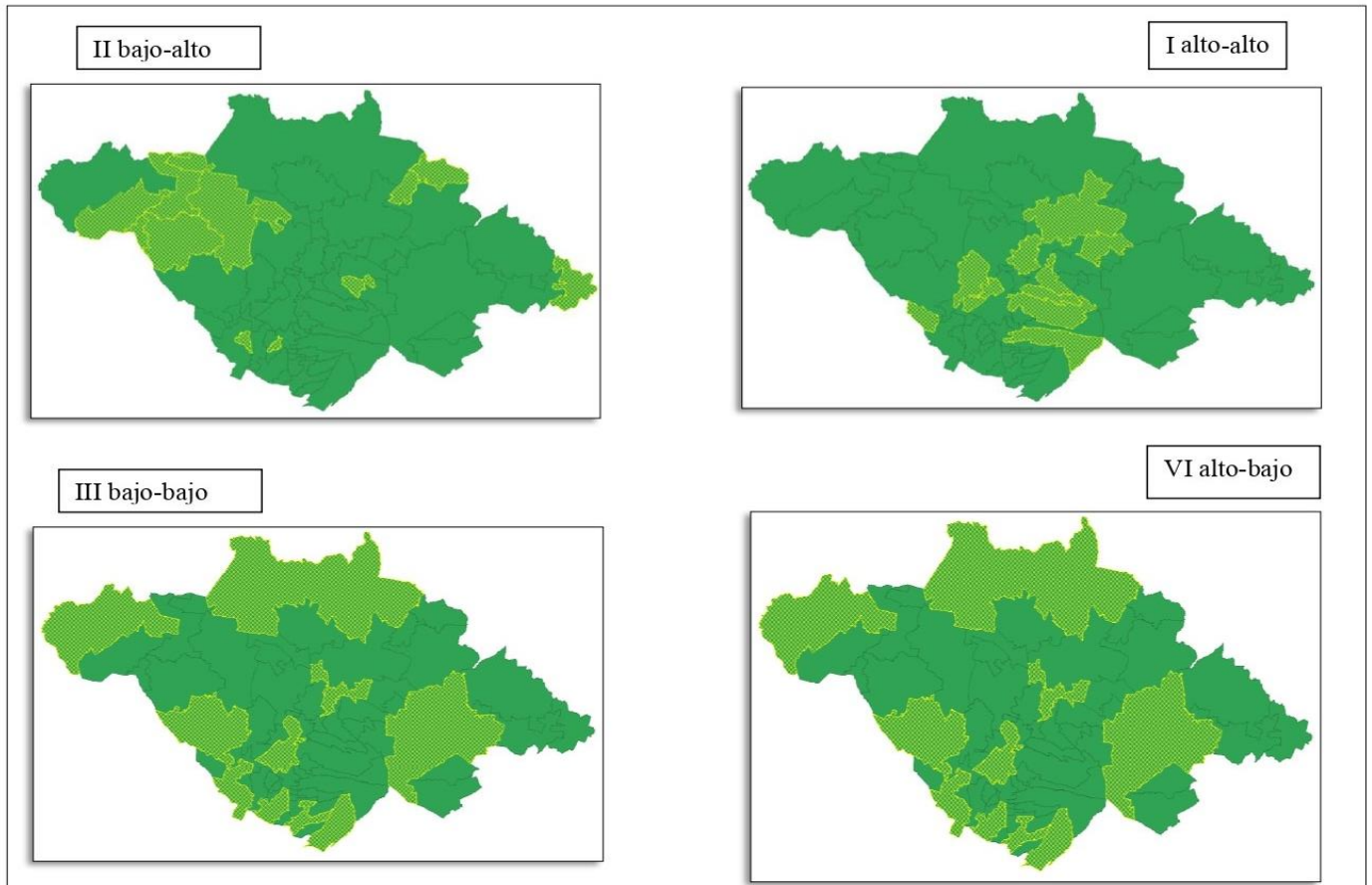
Fuente: Elaboración propia

Figura 3. Municipios con PRI+, 2021



Fuente: Elaboración propia

Figura 4. Municipios con Morena, 2021



Fuente: Elaboración propia

**Tabla 4.** Municipios según cuadrantes de Moran, 2021

Cuadrantes	PE	PRI+	Morena+
Localidad alta con vecinos alto (I)	Terrenate, Tepeyanco, Teolochocho, Acuamanala, Sta. Isabel Xiloxotla, Sta. Cruz Quilehltla, San Lucas Tecopilco, Sn Juan Huactzinco, San Jerónimo Zacualpan, San Damián Texoloc, Lázaro Cárdenas, Emiliano Zapata.	Altzayanca, Totolac, Tetla de la Solidaridad, Teolochocho, Panotla, Chiautempan, Yauhquemehcan, Xaloztoc,	Totolac, Tetla de la Solidaridad, Teolochocho, Panotla, Tepetitla de Lardizabal, Contla de J.Cuamatzi, Chiautempan, Yauhquemehcan, Xaloztoc.
Localidad baja con vecinos alto (II)	Tlaxco, Tetlatlahuca, Tetla de la Solidaridad, Panotla, Nativitas, Ixtacuixtla, Huamantla, Chiautempan, Zacatelco, Papalotla de Xicohtécatl.	Cuapiaxtla, El Carmen Tequexquitla, Atlangatepec, Apetatitlán de A. Carvajal, Zitlaltepec de T. S. Santos, Tocatlán, Tetlatlahuca, Terrenate, Tepeyanco, Teolochocho, Tenancingo, Sta. Cruz Tlaxcala, Panotla, Acuamanala de M. Hidalgo, Nanacamilpa de M. Arista, Tepetitla de Lardizabal, Mazatecochco de J. M. Morelos, Ixtenco, Muñoz de D. Arenas, Amamaxac de Guerrero,	Cuaxomulco, El Carmen Tequexquitla, Nanacamilpa de M. Arista, Hueyotlipan, Españita, Sanctórum de L.Cárdenas, Sta. Apolonia Teacalco, San Lucas Tecopilco, San Juan Huactzinco, Lázaro Cárdenas, Emiliano Zapata, Benito Juárez.

		<p>Sta. Isabel Xiloxotla, San José Teacalco, San Jerónimo Zacualpan, San Fco. Tetlanohcan, San Damián Texoloc, La Magdalena Tlaltelulco, Lázaro Cárdenas, Emiliano Zapata, Benito Juárez, Xicohtzinco, Xaltocan, Tzompantepec.</p>	
<p>Localidad baja con vecinos bajo (III)</p>	<p>Calpulalpan, Apizaco, Zitlaltepec de T. S. Santos, Totolac, Tlaxcala, Tenancingo, Sta.Cruz Tlaxcala, San Pablo del Monte, Nanacamilpa de M.Arista, Tepetitla de Lardizabal, Contla de J. Cuamatzi, Ixtenco, Sanctórum de L. Cárdenas, Amaxac de Guerrero, La Magdalena Tlaltelulco, Benito Juárez, Yauhquemehcan, Xaloztoc, Tzompantepec</p>	<p>Cuaxomulco, Hueyotlipan, Españita, Sta. Cruz Quilehtla, Sta. Catarina Ayometla, Sta. Apolonia Teacalco, San Lucas Tecopilco, San Lorenzo Axocomanitla, San Juan Huactzinco</p>	<p>Cuaxomulco, El Carmen Tequexquitla, Nanacamilpa de M.Arista, Hueyotlipan, Españita, Sanctórum de L. Cárdenas, Sta. Apolonia Teacalco, San Lucas Tecopilco, San Juan Huactzinco, Lázaro Cárdenas, Emiliano Zapata, Benito Juárez.</p>
<p>Localidad alta con vecinos bajo (IV)</p>	<p>Cuaxomulco, Cuapiaxtla, Altzayanca, Atlangatepec, Apetatitlán de A. Carvajal, Tocatlán, Mazatecochco de J. M.</p>	<p>Calpulalpan, Apizaco, Tlaxco, Tlaxcala, San Pablo del Monte, Nativitas, Contla de J.Cuamatzi, Ixtacuixtla</p>	<p>Calpulalpan, Apizaco, Tlaxco, Tlaxcala, San Pablo del Monte, Nativitas, Ixtacuixtla de M.Matamoros,</p>





	Morelos, Hueyotlipan, Españita, Muñoz de D.Arena, Sta. Catarina Ayometla, Sta. Apolonia Teacalco, Sta. Ana Nopalucan, San Lorenzo Axocomanitla, San José Teacalco, San Fco. Tetlanohcan, Xicohtzinco, Xaltocan	de M.Matamoros, Huamantla, Zacatelco, Papalotla de Xicohténcatl	Huamantla, Zacatelco, Papalotla de Xicohténcatl.
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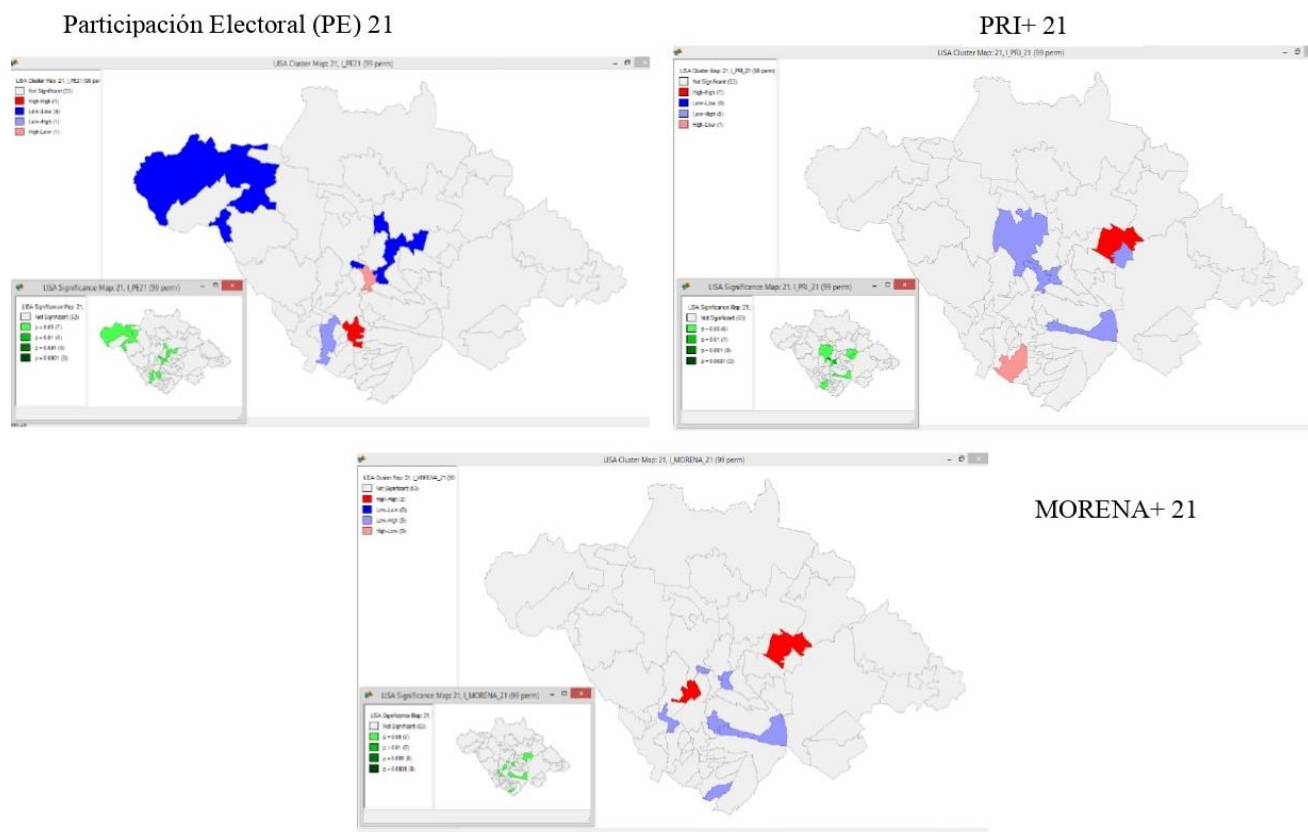
Fuente: Elaboración propia

**Tabla 5.** Municipios según LISA, 2021

PE	Alto-alto= Tepeyanco   Bajo-bajo = Calpulalpan, Sanctórum de Lázaro Cárdenas, Apizaco, Amaxac de Guerrero   Bajo-alto = Tetlatlahuca   Alto- bajo = Apetatitlán de A.Carvajal
PRI+	Alto-alto = Xaloztoc   Bajo-bajo = ninguno   Bajo-alto = Xaltocan, Apetatitlán de A.Carvajal, Amaxac de Guerrero, Tocatlán, San Fco. Tetlanohcan   Alto-bajo = Zacatelco
Morena+	Alto-alto = Xaloztoc, Totolac   Bajo-bajo = ninguno   Bajo-alto = Amaxac de Guerrero, San Damián Texoloc, La Magdalena Tlaltelulco, San Fco. Tetlanohcan, Tenancingo   Alto-bajo = ninguno

Fuente: Elaboración propia

**Figura 5.** Clúster y significancia de la PE y preferencia política, 2021



Fuente: Elaboración propia

### The gubernatorial election, 2021

Tlaxcala was one of the states that underwent a complete renewal of elected positions: one governorship, 25 councils (15 relative majority and 10 proportional representation), 470 city councils (60 municipal presidencies, 60 syndicates, 350 councilors) and 299 community presidencies, coupled with the change in the three federal councils. This meant a saturation of candidates in the electoral arena, due to the increase in electoral competition by the new political parties (Zempoalteca, November 14, 2020). The new national political parties that joined were: Progressive Social Networks (RSP), Encuentro Solidario (ES) and Fuerza Social por México (FSM). While at the local level: Panalt, Impacto Social Sí and PEST.<sup>4</sup>

<sup>4</sup> Nota: las acreditaciones de los registros de los nuevos partidos políticos se encuentran en los Acuerdos Generales del Instituto Tlaxcalteca de Elecciones para el RSP (ITE-CG 55/2020 del 11 de noviembre de 2020), ES (ITE-CG 40/2020 del 15 de octubre de 2021), FSM (ITE-CG 56/2020 del 11 de noviembre del 2021), Panalt (ITE-CG 37/2019 del 8 de noviembre de 2019), Impacto Social Sí (ITE-CG 13/2019 del 29 de

For the first time and derived from the electoral reform approved in August 2020, the criteria of gender parity, integrity by two blocks according to voting percentages, parity candidacies vertically, horizontally and transversally, among others, were going to be taken into account. , as well as the new provisions to punish political violence for reasons of gender, although some of these criteria did not apply to new political parties or coalitions that had not competed in previous elections (Zempoalteca, September 9, 2020). However, the Supreme Court of Justice of the Nation (SCJN) annulled, towards the end of November, the modifications made by the local legislature due to errors in the procedure. It left without effect the gender parity guidelines, the term of separation from the position and the integration of an inclusive language; In addition, candidates for a popularly elected position were also not required to prove that they were free of a record for the crime of political violence against women (Cruz, November 30, 2020).

For this election, there were six candidates and one candidate for the governorship. Two of them, at the head of historical and ironic coalitions, marked and concentrated electoral preferences. Both coalitions competed with this formula for said position and in some local districts, but not for the positions in city councils and community presidencies.

The candidates were: Anabel Ávalos Zempoalteca at the head of the United Coalition for Tlaxcala, made up of the PRI, the National Action Party (PAN), the Party of the Democratic Revolution (PRD) and the local Alianza Ciudadana (PAC) and Socialista (PS) parties. . Lorena Cuéllar Cisneros, for her part, headed the Together We Will Make History Coalition in Tlaxcala, made up of the Morena, PT, PVEM, and PEST parties. Eréndira Elsa Carlota Jiménez Montiel, for Citizen Movement. Evangelina Paredes Zamora, for the Partido Impacto Social Sí, recently created locally. Viviana Barbosa Bonola, for the Fuerza por México party. Liliana Becerril Rojas, for the Encuentro Solidario Party (PES). And Juan Carlos Sánchez García, for the Progressive Social Networks Party (RSP).

It is important to remember that Lorena Cuéllar Cisneros, from the coalition Together We Will Make History in Tlaxcala, had lost with the PRD in the previous electoral process, with 30.13%, against the PRI coalition, which obtained 32.49%. After migrating to Morena, she managed to position herself as a candidate and win federal district 03 Zacatelco, with 54.27%, the highest percentage compared to the other two federal

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marzo de 2019) y PEST (ITE-CG 14/2019 del 15 de abril de 2019). Para su consulta véase: <https://www.itetlax.org.mx/ite2020/acuerdos>.



districts won by said party. For what she was outlined, in the media, as the "natural candidate" for the governorship, after becoming the superdelegate of federal social programs in the entity. But that did not mean an immediate appointment, since there were internal fractures in the party with the founding groups of Morena in Tlaxcala (Ruiz, January 28, 2019). While in the previous election Morena had obtained only 6.33% of the votes with the candidate Martha Palafox, also of PRI extraction, but without greater identification with the population. Regarding Anabel Ávalos Zempoalteca, from the Coalición Unidos por Tlaxcala, she had won the municipal presidency of the capital in the previous electoral process at the head of the PRI; she had in her favor, therefore, her permanence in the party.

The electoral results dictated the victory for the Together We Will Make History Coalition in Tlaxcala; they also reflected an increase in PE similar to the 2010 election (see table 5), as the history shows (see table 6). Likewise, table 7 details the territorial gains and losses by municipality, according to electoral preference. Its geographical representation, at the municipal level, is detailed in figure 8 and the description of the municipalities is found in table 8. Finally, table 9 presents the official results by electoral district.

**Tabla 5.** Magnitudes del voto, 1998-2021

Año	Lista nominal	Votación emitida	Votación nula	Votación total	%
1998	525 822	323 227	9033	332 260	63.18
2004	661 405	407 509	11 767	419 276	63.39
2010	788 939	483 336	27 138	510 474	64.70
2016	880 010	565 461	17 848	583 309	66.28
2021	973 393	611 813	15 851	627 664	64.48

Electoral de 1998, 2004 y 2010 del Instituto Electoral de Tlaxcala.

Para 2016 y 2021 con datos disponibles del Instituto Tlaxcalteca de Elecciones

Fuente: Elaboración propia

**Tabla 6.** Historial de resultados electorales para gobernador, 1998-2021

Año	PAN	PRI	PRD	Morena	Otros
1998	8.35	43.04	45.29		0.61
2004	34.92	33.95	28.32		0.00
2010	38.01	45.32	4.78		6.58
2016	18.38	32.49	30.13	6.33	9.54
2021		36.87*		48.67*	11.92

\*El dato porcentual corresponde a las respectivas coaliciones.

Fuente: Elaboración propia

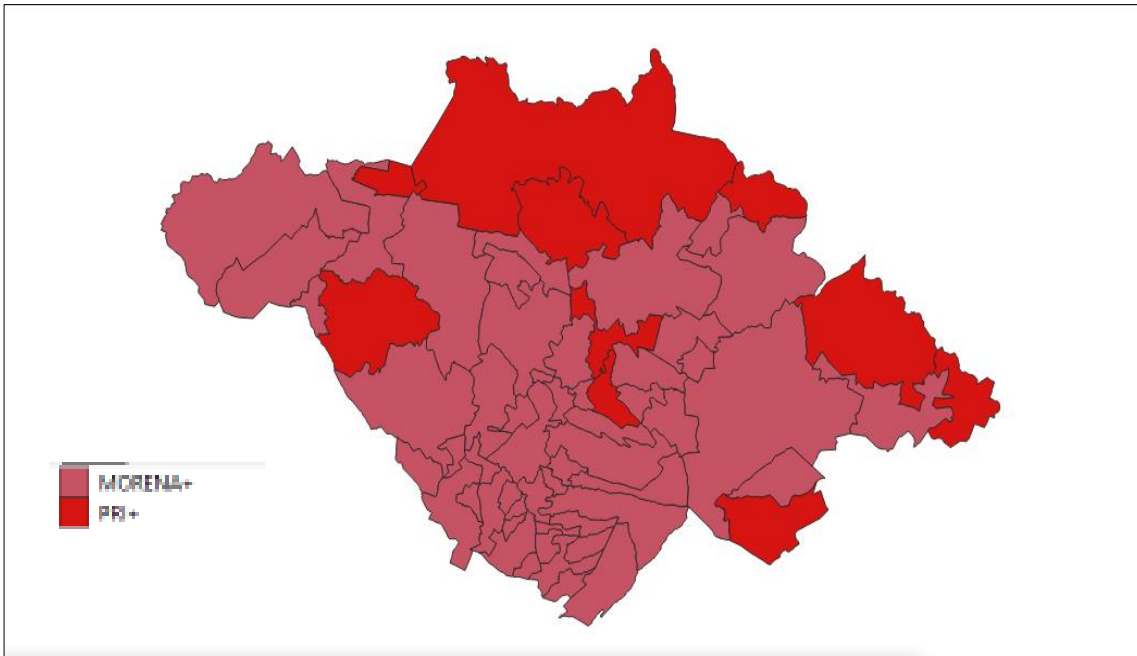
**Tabla 7.** Municipios ganados por partido político, elección a gobernador

Año	Partido político			
	PAN	PRI	PRD	Morena
1998	0	33	27	
2004	16	27	17	
2010	26	34	0	
2016	5	22	33	
2021		10*		50*

\*El dato numérico corresponde a las respectivas coaliciones

Fuente: Elaboración propia

**Figura 8.** Resultados electorales para gobernador por municipio, 2021



Fuente: Elaboración propia

**Tabla 8.** Municipios ganados por las coaliciones, elecciones a gobernador 2021

Partido político/coalicción	Municipios
PRI+	Atlangatepec, Altzayanca, Apizaco, El Carmen Tequexquitla, Española, Tepetitla de Lardizabal, Tlaxco, Zitlaltepec de T. S. S., Benito Juárez y Emiliano Zapata.
Morena+	Amamax de Guerrero, Apetatitlán de A. C., Calpulalpan, Cuapiaxtla, Cuaxomulco, Chiautempan, Muñoz de D. A., Huamantla, Hueyotlipan, Ixtacuixtla de M. M., Ixtenco, Mazatecochco de J. M. M., Contla de J. C., Sanctorum de L. C., Nanacamilpa de M. A., Acuamanala de M. H., Nativitas, Panotla, San Pablo del Monte, Sta. Cruz Tlaxcala, Tenancingo, Teolochocho, Tepeyanco, Terrenate, Tetla de la Solidaridad, Tetlatlahuca, Tlaxcala, Tocatlán, Totolac, Tzompantepec, Xaloztoc, Xaltocan, Papalotla de Xicohtécatl, Xicohtzinco, Yauhquemehcan, Zacatelco, Lázaro Cárdenas, La Magdalena Tlaltelulco, San Damián Texoloc, San Francisco Tetlanohcan, San Jerónimo Zacualpan, San José Teacalco, San Juan Huactzinco, San Lorenzo Axocomanitla, San Lucas Tecopilco, Sta. Ana Nopalucan, Sta. Apolonia Teacalco, Sta. Cruz Quilehltla y Sta. Isabel Xiloxoxtla.

Fuente: Elaboración propia

**Tabla 9.** Resultados electorales para gobernador 2021

Distritos Electorales	PAN, PRI, PRD, PAC y PS	PT, PVEM, MORENA, PANALT y PEST	MC	PIS "SI"	PES	RSP	FXM	No Registrados	Nulos	V.Total
1	14204	13353	1081	196	332	1484	707	6	808	32171
2	18774	16581	402	170	275	2648	519	24	1218	40611
3	17529	19239	783	401	368	3098	663	6	1124	43211
4	16290	15965	704	222	485	3927	822	14	891	39320
5	14534	16801	549	157	262	6182	407	0	1046	39938
6	14303	25374	765	413	388	2122	1172	10	1419	45966
7	18509	25496	1405	189	307	1306	945	21	737	48915
8	14616	22330	1503	788	749	1203	738	11	834	42772
9	13210	21979	892	188	257	1904	1422	13	940	40805
10	13606	15061	952	253	247	1532	452	12	1067	33182
11	17768	17341	339	137	189	2374	736	8	1276	40168
12	15052	25473	1209	234	378	4147	1112	6	1113	48724
13	14348	24946	1086	273	237	3458	913	19	1103	46383
14	13783	24432	1111	238	423	1359	387	0	1094	42827
15	14898	21097	1879	257	460	2027	872	0	1181	42671
<b>TOTAL</b>	<b>231424</b>	<b>305468</b>	<b>14660</b>	<b>4116</b>	<b>5357</b>	<b>38771</b>	<b>11867</b>	<b>150</b>	<b>15851</b>	<b>627664</b>
<b>%</b>	<b>36.87</b>	<b>48.67</b>	<b>2.34</b>	<b>0.66</b>	<b>0.85</b>	<b>6.18</b>	<b>1.89</b>	<b>0.02</b>	<b>2.53</b>	<b>100</b>

Fuente: Elaboración propia



## Some final thoughts

The 2021 elections meant the victory of Morena and her coalition led by Lorena Cuéllar Cisneros, but they also implied a territorial reconfiguration of the main political forces in the entity that, together with the new political parties (associated with traditional and local political actors), have blurred the party system at the local level and whose incursion into political competition further atomizes electoral preference.

The analysis of the territorial reconfiguration of the vote is limited, as shown in figure 8 and table 8, since the region is used as a container where the electoral processes take place. However, when using the spatial analysis of the vote, regions are presented whose neighborhood criterion draws and identifies the negative autocorrelation trend of both the PE and the two coalitions, with minimal clusters that change in each election. So the voting behavior in this election is not randomly distributed in space. This trend is added to the characteristics of the vote in the state for the election of governor: volatile, personalized, competitive and spatially dependent. This is a non-traditional work on voting and a contribution to voting studies in the entity, since although electoral behavior as a social phenomenon occurs in space and time, its incorporation presents comprehensive results (methodologically) with the spatial analysis.

The electoral agglomerations (clusters) located with the PE variable are: high-high = Tepeyanco; low-low = Calpulalpan, Lázaro Cárdenas Sanctorum, Apizaco, Amaxac de Guerrero; low-high = Tetlatlahuca; high-low = Apetatitlán by A. Carvajal. And for the two coalitions:

- PRI: high-high = Xaloztoc; low-low = none; low-high = Xaltocan, Apetatitlán de A. Carvajal, Amaxac de Guerrero, Tocatlán, San Fco. Tetlanohcan; high-low = Zacatelco.
- Morena: high-high = Xaloztoc, Totolac; low-low = none; low-high = Amaxac de Guerrero, San Damián Texoloc, La Magdalena Tlaltelulco, San Fco. Tetlanohcan, Tenancingo; high-low = none.

The results are potentially interesting to expand in complementary works, as a future line of research, by incorporating the rest of the positions to be elected, as well as the incorporation of socioeconomic variables and electoral indicators, among others.



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