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## RESEARCH ARTICLE

# Geographical analysis of voter apathy in presidential elections between 1999 and 2011 in Nigeria

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Correlates and predictors of the spatiotemporal pattern of voter apathy in presidential elections were analyzed for all the states in Nigeria between 1999 and 2011, using data from the National Bureau of Statistics. The Moran Index (Local and Global), analysis of variance, and geographical weighted regression were used in understanding the spatiotemporal patterns and drivers of voter apathy. There were statistically significant temporal ( $F = 4.811$ ,  $P \leq .05$ ) and spatial ( $F = 8.133$ ,  $P \leq .05$ ) variations, and spatial dependency in voter apathy. Men's population size, expenditures on number of higher institutions of learning, expenditures on household goods and education were main predictors of voter apathy.

**Keywords:** Apathy; geographical weighted regression; geographic information system (GIS); ethnic instrumental voting; election

### 1. Introduction

Participation in the electoral process ensures leadership accountability and it is a measure of democratic performance (Dalton, 1998; Powell, 1982). Voter turnout is a measure of the ability of government, electoral management, and civil society to motivate eligible voters to register and vote during elections. Voter apathy results in deliberate self-withdrawal of citizen participation in an electoral process. This has become a social problem, especially among the young population in most democratic states (Chiroro, 2005b; Gill, Johnstone, & Williams, 2012; Powell, Williams, Bock, Doellman, & Allen, 2012).

Instrumental ethnic voting theory and the rational voter model dominate the literature on voter apathy. Instrumental ethnic voting theory posits that voters use a politician's ethnic or party's ethnic configuration as a measure of future performance and/or expected benefits they are most likely to derive (Posner, 2005). Ethnicity and expected benefits from politicians are, therefore, among the determinants of a voter's choice. Voters' choices are also influenced by the previous performance of a party or an individual either in the community or in office (Conroy-Krutz, 2012). Generally, voters' resources, motivations, and available networks of mobilisation are additional considerations in electoral participation (Verba, Schlozman, & Brady, 1995). Voters' resources refer to the socioeconomic capability and capacity of individuals that predispose them to vote in an election. These include their education, income, and

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political experience. Therefore, voters with higher socioeconomic status are more likely to vote than poor and less educated citizens because higher education is associated with greater political knowledge and interest (Leighley & Nagler, 1992; Milligan, Moretti, & Oreopoulos, 2003; Sondheimer & Green, 2010).

Difference in access to information and education among voters has also been identified as a determinant of voter apathy (Feddersen & Pesendorfer, 1999; Ghirardato & Katz, 2002). Ignorance of political systems and candidates' agendas may exact a negatively strong influence on citizen's participation in elections (Orman, 2010). Mfundisi, (2005) notes that in Botswana, voter apathy is a product of illiteracy, poverty, the absence of democracy during the colonial era, lack of voter education, lack of civic education, and unaccountable politicians. Using a small sample survey, Agu, Okeke, and Idike (2013) also established a relationship between voter apathy and variables such as voter's age, occupation, and gender. Younger people, employed citizens, and the male population tend to participate more in voting activity than the elderly, unemployed, and the female population, respectively (Leighley & Nagler, 1992). The gender variation in voting behavior could, however, be a product of cultural bias against women. Research on the relationship between socioeconomic indicators and voter apathy is inconclusive and may be dependent on scale of investigation. This is because some scholars have argued that citizens with higher incomes, greater wealth, and better education tend to vote more than less-advantaged citizens, while others have indicated that disadvantaged people tend to vote more (Carreras & Castañeda-Angarita, 2013).

Voters' motivation refers to factors that initiate and sustain people's interest in political participation. It partly results from candidates, parties, activists, and groups inducing people to participate in elections. Availability of political information, trust in political institutions, perception of electoral integrity, and belief that votes influence governance and politics are central to reducing apathy. Conversely, lack of trust in politicians and the electoral process may exacerbate voter apathy. In such a case, apathy becomes a tool to express dissatisfaction with governance instead of engaging in political violence (Banducci & Karp, 2009; Birch, 2010; Huntington, 1991; Norris, 2002). Government failure to address contemporary challenges facing citizens often leads to a feeling that nothing will change, irrespective of who wins in elections. This can further exacerbate voter apathy (Birch, 2010). Gill et al. (2012) aver that a high level of voter apathy is an indication that people are becoming dissatisfied with the traditional political parties and party structure.

Endemic corruption increases voter apathy and contributes to the negative perception of the political and institutional framework within which it operates (Rock, 2009; Sung, 2004). Corruption leads to inefficient resource allocation and poor service delivery and can lead to voter apathy (Podobnik, Shao, Njavro, Ivanov, & Stanley, 2008). There is a significant positive relationship between voter apathy and corruption. As corruption increases, the percentage of people that vote in election decreases (Stockemer, LaMontagne, & Scruggs, 2013). There is also a link between corruption and voter fatigue, which results from exhaustion experienced by voters when their votes do not influence any particular political outcome or when elections happen too frequently (Chiroro, 2005b).

The perceived state of the economy and the political party structure also contribute to voter apathy (Mfundisi, 2005). Significant voter turnout is often witnessed during economic recessions, while increased voter apathy is witnessed when the economy performs well under the administration of an incumbent (Orman, 2010). Voter apathy could also be a viable tool in the hand of the electorate in addressing government's failure to bring about economic growth and national development anticipated by the people. Thus,

the effect of the economy on voter apathy could either be positive or negative. Furthermore, voter apathy could result from years of political and economic neglect of neighborhoods and worsened by unmet citizen expectations from government, especially in rural areas where service provisions are grossly inadequate (Mfundisi, 2005). Apathy has also been attributed to fear and widespread violence that characterize elections in some developing countries (Salamon & Van Evera, 1973).

The length of the democratic regime or level of democratic maturity has been found to have an insignificant effect on voter apathy (Remmer, 1991). However, historical circumstances, such as a long history of wars, may militate against massive voter turnout at elections (Mfundisi, 2005). Voter apathy results in unequal participation in elections and may sustain the dominance of a political class that wants to perpetuate themselves in politics (Lijphart, 1997). It leads to underrepresentation of certain groups and individuals in society. Increasing voter apathy, as witnessed in developing countries, affords certain incumbent politicians more opportunities to abuse their privileges for private gains.

Nigeria's electoral system is bedevilled by myriads of challenges, ranging from vote snatching, stuffing, hijacking, outright vote stealing, vote inflation, destruction, and cancellation, coupled with a long history of military rule, which may erode people's confidence in the electoral process (Ochulor, 2010). In Nigeria, voter apathy manifests in declining number of registered voters, refusal to vote during elections, failure to protest election rigging and violence, and failure to assist security agents with necessary information required to address electoral injustice (Yakubu, 2012). Although there are many studies on voter apathy, only few emerged from Africa. Where they exist, the methodologies adopted are largely descriptive, with limited engagement in rigorous quantitative analysis of voter apathy. Apart from using sample survey, much of the research has not reflected the time and space dynamics that characterize voter apathy in most countries.

The dynamic socioeconomic, demographic, and developmental environment within countries might account for the spatiotemporal pattern of voter apathy. Scholars have investigated the determinants of within and across-country variations in voter apathy and observed that institutional and contextual factors had positive impacts on voters' turnout and that these factors varied geographically (García, 2009; Pérez-Liñán, 2001; Remmer, 1991). Geographic information system (GIS) provides opportunity to link the spatial and temporal data using space as a unifying geometry. It offers an integrated and a flexible tool for the manipulation and analysis of large volumes of spatial data and information both in time and space (Peuquet, 1994).

In this study, we analyzed the spatiotemporal pattern in voter apathy with a view to quantitatively identifying its correlates and predictors using data on presidential election turnout in 1999, 2003, and 2011. Based on an extensive literature survey, possible explanatory variables of voter apathy used included gender, population size, poverty measures, expenditure patterns, media ownership, and educational attainment across different states in Nigeria. We hypothesized that the pattern of voter apathy is random and that no spatiotemporal variations exist in its distribution. This study is important because voter apathy varies in space and time (Lassen, 2005). For instance, spatiotemporal variation in voter apathy may be due to dynamics in the economic system or based on the divergence in state government policies and the ruling political party's ideologies, among other factors.

This study is quite different from earlier works on voter apathy in Nigeria because it uses actual election data at national level to assess voter apathy. Secondary data that referred to actual elections, rather than surveys, were used to overcome the often

reported bias between voter turnout from surveys and real elections because voters' turnout levels from surveys are generally higher than actual turnout (Lassen, 2005). Owing to factors such as varying ethnic and socioeconomic development of component states in Nigeria, causes of voter apathy may be different in different states. The identification of these factors holds promise for more targeted interventions in addressing the challenge of rising voter apathy. Besides, this study employed a quantitative approach, rather than a qualitative one, to understanding the temporal and spatial patterns of voter apathy. The explanation of the current trend in voter apathy was subsequently situated within the theories of instrumental ethnic voting.

## 2. Data and analysis

The data used in the analysis of voter apathy in Nigeria were obtained from the Annual Abstract of Statistics published by the National Bureau of Statistics (NBS). The NBS is vested with the statutory duty of collecting, compiling, and processing social and economic data. The results of the presidential elections conducted since the beginning of the Fourth Republic were available in the NBS report except for the year 2007. The unit of data assemblage and analysis was the state level. The reason for the choice of this aggregate level for empirical analysis of voter apathy, according to Matsusaka and Palda (1999), is that at this level, 'individual idiosyncrasies cancelled each other out,' although results from such are subject to ecological fallacies (Carreras & Castañeda-Angarita, 2013). The national outlook of the presidential elections and the belief that the president has substantial control over resource allocation also motivated the choice of presidential rather than state or local elections. Besides, the presidency is the most exalted political office.

The computation of voter apathy involved the subtraction of the number of votes cast from the number of registered voters. The average voter apathy in all the three elections for each state was calculated. Based on an extensive literature survey, possible explanatory variables of voter apathy were selected and used, including gender-based population size, poverty measures, expenditure patterns, media ownership, and educational attainment across different states in Nigeria (Leighley & Nagler, 1992; Milligan et al., 2003; Orman, 2010; Sondheimer & Green, 2010). The calculated voter apathy for each state and other explanatory variables were linked digitally to the administrative map of Nigeria within a GIS. The ability to link disparate data-set to their corresponding spatial or administrative units is one of the advantages of using GIS. The linkage was accomplished using a unique identifier for the attributes and spatial data in the ArcGIS® software. The linkage permitted various spatial statistical analyses, such as the Moran-I and geographically weighted regression (GWR), including the mapping of the results of voter apathy by state.

An assessment of the spatial pattern of voter apathy was conducted to test the hypothesis of spatial randomness or lack of spatial dependency or autocorrelation of voter apathy across states. This was done using both the global and local Moran's I statistics (Anselin, 1995; Fotheringham, Brunsdon, & Charlton, 2003). The prevalence of spatial autocorrelation is a driving force in geographical investigation and the non-random nature of most events and distribution in space makes geography an indispensable discipline (O'Sullivan & Unwin, 2003). The global Moran's I identified spatial dependency in voter apathy by state across the entire country, while the local Moran's I, one of the local indicators of spatial autocorrelation (LISA), identified clusters of states with either unusually high or low voter apathy for each election (hot spots and cold spots).

When apathy values cluster spatially (high values cluster near other high values, low values near other low values), the Moran's index is positive. Conversely, when high values tend to be near low values, the index will be negative. If positive cross-product values balance negative cross-product values, the index will be near zero. Thus, voter apathy hot spots occurred where states with high apathy figures are surrounded by (share boundaries with) states with equally high voter apathy figures. Cold spots occurred when states with low voter apathy were surrounded by states with low voter apathy. The Moran index (global and local) ranges between  $-1$  (indicating perfect dispersion) and  $+1$  (perfect correlation), while a value of zero (0) indicates a random spatial pattern. In addition, Moran's  $I$  values were transformed to Z-scores in which values greater than 1.96 or smaller than  $-1.96$  indicate spatial autocorrelation that is statistically significant at the 5% level (Li, Calder, & Cressie, 2007; Moran, 1950).

GWR was used to identify predictors of voter apathy by state across the country. GWR has been used extensively in the literature to characterize events that vary spatially (based on location) and provides statistical explanations that include such spatial variability (Brunsdon, McClatchey, & Unwin, 2001; Huang & Leung, 2002). The spatial statistical analyses to determine spatial association (global and local Moran's  $I$ ) and its drivers through GWR, and correlation analysis were conducted using ArcGIS 10.2<sup>®</sup> software. All statistical tests of significance were conducted at 95% confidence limit.

Correlation was used to explore the relationship between voter apathy and the chosen explanatory variables. Analysis of variance was used to investigate the spatiotemporal variations in voter apathy with a view to ascertaining whether there was any significant difference in voter apathy between the three periods and across different states in Nigeria.

### 3. Results

#### 3.1. Spatiotemporal variations in registered voters, vote cast, and voter apathy

The total number of registered voters in the 1999 presidential election was 57,938,945, while 30,280,052 people voted. Voter turnout was 52.26%, while apathetic voters accounted for 47.74% of the registered voters. Given a total population of 108,258,359 and a voting-age population of 52,792,781, the voting-age population turnout (57.36%) was slightly higher than the overall voter turnout (ISS, 2011). In the 2003 presidential election, voter turnout increased to 69.08%, while apathetic voting declined to 30.92%. The voting-age population turnout was 65.33%, which was comparatively lower than the general voters' turnout; nevertheless, it was still higher than the voting-age turnout in the 1999 election (Table 1). In the 2007 presidential election, voter turnout declined to 57.49%, while voting-age population turnout was 49.85%, which was lower than

Table 1. Temporal patterns in voter apathy in presidential elections (1999–2011).

| Year | Voter turnout (%) | Total vote | Registration | Voting-age population turnout (%) | Voting-age population | Population  |
|------|-------------------|------------|--------------|-----------------------------------|-----------------------|-------------|
| 1999 | 52.26             | 30,280,052 | 57938945     | 57.36                             | 52,792,781            | 108,258,359 |
| 2003 | 69.08             | 42,018,735 | 60823022     | 65.33                             | 64,319,246            | 129,934,911 |
| 2007 | 57.49             | 35,397,517 | 61567036     | 49.85                             | 71,004,507            | 131,859,731 |
| 2011 | 53.68             | 39,469,484 | 73528040     | 48.32                             | 81,691,751            | 155,215,573 |



voter turnout. The voting-age population turnout further declined to 48.32% in 2007 (Table 1). Generally, between 1979 and 2011, the country's population increased by 77,374,573 (99.40%), but the number of registered voters increased by only 25,028,949 (51.61%).

Lagos State accounted for 7.06% of the registered voters in the 1999 presidential election, other states with similarly high number of registered voters included Kano (6.35%) and Kaduna (4.38%) States. Lower numbers of registered voters were recorded in the Federal Capital Territory (FCT) (.66%), Nassarawa (1.30%), and Bayelsa (1.51%) States. Highest numbers of votes cast in the 1999 presidential election were in Lagos (5.80%), Kaduna (5.67%), and Rivers (5.19%), while a lower number of votes was recorded in the FCT (.33%), Yobe (1.06%), and Ebonyi (1.16%) States. The FCT (1.03%), Bayelsa (1.30%), and Nassarawa (1.40%) States had the lowest percentages of registered voters in the 2003 presidential election; while the highest was in Lagos (7.49%), Kano (6.58%), and Kaduna (4.31%) States. The pattern was almost similar to what obtained in the 1999 presidential election. The average number of registered voters per state was 1,643,865, and 27 (72.97%) states had figures below the average, while 10 (27.03%) states had more than the average figure. The FCT (.65%), Ekiti (1.0%), and Kwara (1.49%) States had lower numbers of votes; Kano (5.57%), Kaduna (5.23%), and Rivers (5.17%) States had higher numbers of votes cast. Ekiti State (.38%), FCT (.56%), and Kwara State (.59%) had the lowest numbers of registered voters in the 2011 election; while the highest figures were in Kano (3.73%), Kaduna (3.58%), and Lagos (2.75%) States. Higher numbers of registered voters were associated with states with higher populations, but lower numbers of registered voters were not necessarily in those states with lower population figures. Generally, there was a significant relationship between the number of registered voters and the number of votes cast in the 1999 ( $r = .840$ ,  $p < .05$ ), 2003 ( $r = .727$ ,  $p < .05$ ), and 2011 ( $r = .836789$ ,  $p < .05$ ) presidential elections, respectively. Therefore, there was a greater association between the numbers of registered voters and the numbers of votes cast during the 1999 and 2011 elections compared to what obtained in the 1999 election.

Taraba (10.81%), Nassarawa (20.34%), and Kogi (21.47%) States had the lowest level of voter apathy; while the FCT (73.31%), Kano (74.31%), and Sokoto (31.07%) States had the highest level of voter apathy in the 1999 election (Figure 1(A)). The highest percentage of apathetic voters in the FCT could be due largely to its commercial and administrative functions. Many of its residents often travel to their respective states of origin to exercise their civic right during elections, thereby leaving the city less populated. This is possible because of the official public holiday that normally precedes elections in Nigeria.

In 2003, Bayelsa (2.95%), Cross Rivers (3.96%), and Rivers (4.45%) States had less than 5% apathetic voters. States with higher voter apathy included Lagos (57.46%), Ekiti (56.81), and FCT (56.28%). More than 50% of the registered voters in each of Lagos, Ekiti, Anambra, and Oyo States, and the FCT did not vote during the 2003 presidential election (Figure 1(B)). Although Lagos State had the highest percentage of apathetic voters in 2003, this figure was lower than what obtained in the 1991 presidential election. The FCT and Lagos State perform both commercial and administrative functions. However, Lagos, in addition, hosts a large number of industrial establishments. It is also important to note that no state in the 2003 election had more than 58% voter apathy. This percentage was comparatively lower than that of the 1999 elections.

Ogun State had the highest voter apathy (70.59%) in the 2011 presidential election. Less than 30% of the registered voters in Bayelsa, Imo, Abia, Akwa Ibom, Rivers, and

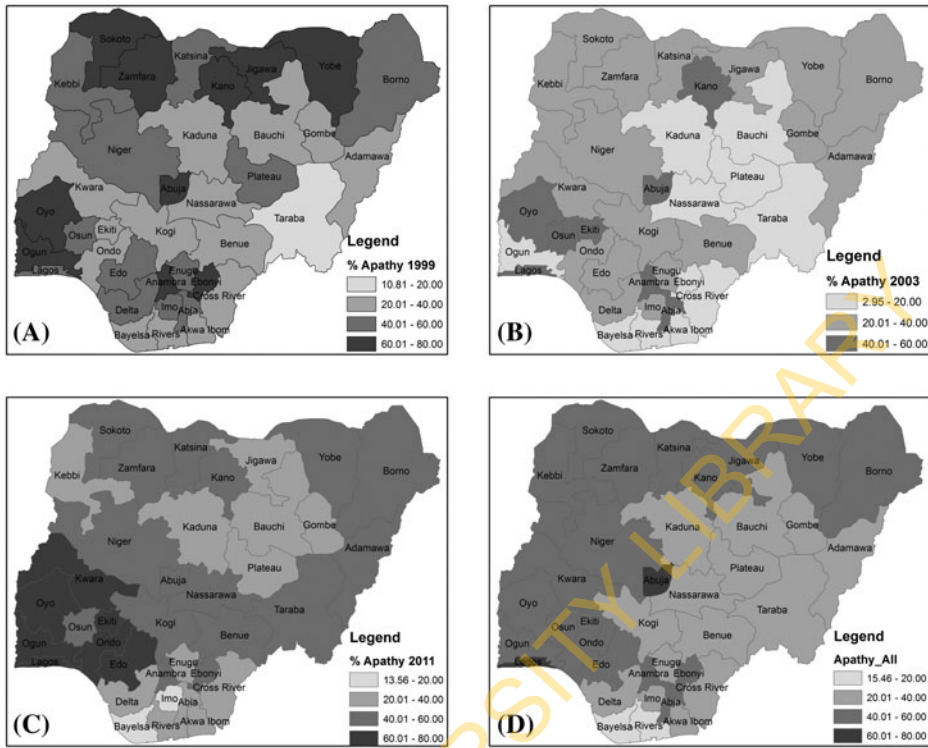


Figure 1. (A): Percentage voter apathy in 1999, (B): percentage voter apathy in 2003, (C): percentage voter apathy in 2011, and (D): percentage overall voter apathy between 1999 and 2011.

Delta States voted in the same election (Figure 1(C)). The highest overall voter apathy of 58.73% was recorded in the FCT and in Lagos State (Figure 1(D)). The correlation between voter apathy and the number of registered voters was significantly positive in the 1999 ( $r = .803, p < .05$ ) and in the 2003 ( $r = .631, p < .05$ ) presidential elections. Therefore, it could be concluded that higher voter apathy was recorded in states with higher numbers of registered voters.

Abia, Anambra, and Imo States were the only states that recorded higher voter apathy in the 2003 compared to the 2011 presidential election, while other states had lower apathy in the 2003. Furthermore, 5% of the states had less than 20% voter apathy in the 1999 and 2011 presidential elections, whereas 32% of the states had less than 20% apathetic voters in the 2003 presidential election. In addition, while Taraba and Nassarawa states had less than 20% apathetic voters in the 1999 and 2003 presidential elections, they had between 41 and 60% apathetic voters in the 2011 presidential elections, respectively. Imo State, which had the second lowest number of apathetic voters in the 2011 election, was among the states that had between 41 and 60% apathetic voters in the 1999 presidential election. Therefore, the pattern of voter apathy varied in time and space. However, in general, most states made some gains in voter participation from 1999 to 2003, but slid backwards significantly by the 2011 election. The gain could have arisen from voters' enthusiasm about the return of democratic dispensation which a number of people fought vigorously to secure from the military. However, the



enthusiasm might have waned because of their inability to determine who government them coupled with large-scale corruption that characterized the democratic dispensation.

Significant temporal variations were observed in voter apathy between 1999 and 2011 ( $F = 4.811, p < .05$ ) and between 2003 and 2011 ( $F = 5.431, p < .05$ ). However, no significant temporal variations existed in voter apathy between 1999 and 2003 ( $F = 3.714, p > .05$ ). Voter apathy in the 2011 presidential election was considerably higher than what obtained during the 2003 presidential election. Apart from the temporal variability, spatial variability also existed in voter apathy. There were significant spatial variations in voter apathy across states in Nigeria ( $F = 8.133, p < .05$ ). Voter apathy in Lagos and Kano States, for example, was consistently significantly higher than in other states.

### 3.2. Spatial patterns of voter apathy in the presidential elections between 1999 and 2011

The Global Moran's- $I$  results showed that, with the exception of the 2003 presidential election results, voter apathy generally exhibited a significantly clustered distributional pattern. The significantly random distribution of voter apathy in 2003 showed that there was no distinct spatial pattern in voter apathy, that is, near states did not exhibit similar patterns of voter apathy compared to states that were farther apart (Table 2). The clustered pattern observed in the remaining years showed that states with similar voter apathy figures were contiguous.

Analysis of local spatial dependency using LISA metrics confirmed that states with high or low voter apathy clustered together. In 1999, significant hot spots ( $p < .05$ ) of voter apathy occurred in Lagos, Ogun, Katsina, Jigawa, Kano, and Kaduna States. These were states that had high voter apathy and shared boundaries with states that had equally high voter apathy. Nassarawa was the only state with significantly ( $p < .05$ ) lower voter apathy (cold spot) surrounded by states with higher voter apathy (Figure 2(A)). Statistically significant hot spots of voter apathy in 2003 were also in Lagos, Ogun, Oyo, Osun, and Katsina States (Figure 2(B)). Four of these states are in the southwestern part, while Katsina is in the northwestern part of Nigeria. Significant hot spots of voter apathy characterized more than 66% of the states in southwestern Nigeria, despite the fact that the president was from this geopolitical zone. Oyo and Osun States also joined the list of states with significant voter apathy in 2003. Surprisingly, none of the states in the country exhibited significant voter apathy cold spot in 2003 compared to what obtained in the 1999 presidential election (Figure 2(B)). In 2011, significant hot spots of voter apathy were in Ogun, Lagos, Oyo, and Osun States,

Table 2. Spatial autocorrelations of voter apathy in presidential elections (1999–2011).

| Years   | Moran-index | Expected index | Variance | Z-score  | P-value | Description                   |
|---------|-------------|----------------|----------|----------|---------|-------------------------------|
| 1999    | .220988     | -.027778       | .014510  | 2.065163 | .038908 | Significant clustering at 5%  |
| 2003    | .031782     | -.027778       | .012231  | .538555  | .590194 | Significantly random          |
| 2011    | .260801     | -.027778       | .011546  | 2.685635 | .007239 | Significant clustering at 1%  |
| Overall | .185636     | -.027778       | .012592  | 1.901816 | .057195 | Significant clustering at 10% |

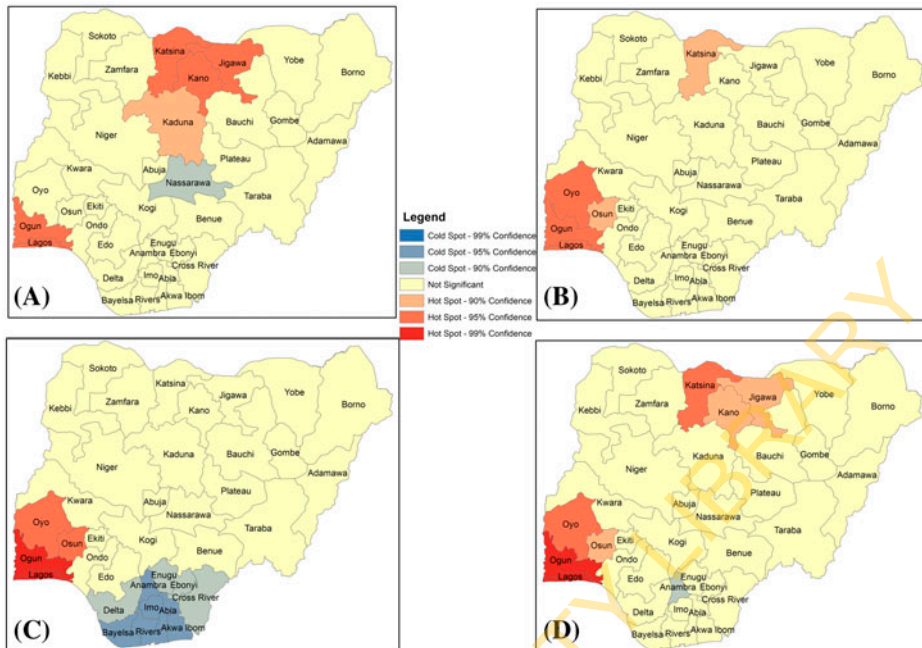


Figure 2. (A): Voter apathy in presidential election in 1999 (B): voter apathy in presidential election in 2003 (C): voter apathy in presidential election in 2011 (D): overall voter apathy in presidential election between 1999 and 2011.

while Bayelsa, Rivers, Akwa Ibom, Imo, Abia, Anambra, Delta, Enugu, Ebonyi, and Cross Rivers States were cold spots of voter apathy. All the cold spots were significant, although at different levels of significance (Figure 2(C)). The hot spots of voter apathy identified using average voter turnout in the 1999, 2003, and 2011 presidential election showed that Lagos, Ogun, Oyo, Osun, Katsina, Kano, and Jigawa States exhibited significant above-average voter apathy, while Anambra State was the only state with a significant cold spot of voter apathy (Figure 2(D)).

### 3.3. *Correlates of voter apathy*

Male population, female population, unemployment, and gross domestic product (GDP) in naira were the most significant correlates of voter apathy (Table 3). These factors exhibited a positive relationship with voter apathy, while unemployment exhibited a negative relationship with it. Therefore, as the percentage of males and females in the population and GDP increased, the percentage of apathetic voters also increased, while there was an inverse relationship between the number of apathetic voters and the percentage of the state population unemployed. All other variables had low correlation coefficients and were not significant ( $p > .05$ ). In addition, the direction of the observed relationship was mixed for some of the variables categories.

### 3.4. *Spatially explicit predictors of voter apathy in the presidential elections*

Diversity in socioeconomic, demographic, cultural, and development-related factors among states may account for the pattern of voter apathy exhibited. An exploratory

Table 3. Correlation between voter apathy and some explanatory variables.

| Variables  | Coefficient | Significance |
|--|-------------|--------------|
| Male population                                      | .891        | .000         |
| Female population                                    | .886        | .000         |
| Unemployment   | -.383       | .010         |
| GDP in Naira   | .378        | .011         |
| % of population more than 15 years that are literate | .121        | .238         |
| Number of higher institutions of learning            | .212        | .103         |
| Radio ownership                                      | -.141       | .202         |
| Television ownership                                 | .186        | .135         |
| Food poverty   | .228        | .088         |
| Absolute poverty                                     | .102        | .275         |
| Income poverty                                       | .132        | .219         |
| Dollar per day poverty                               | .093        | .292         |
| Human poverty index                                  | .137        | .210         |
| Expenditure on rent                                  | .226        | .089         |
| Expenditure on fuel light                            | .155        | .179         |
| Expenditure on household goods                       | .090        | .299         |
| Expenditure on health care                           | .160        | .173         |
| Expenditure on transportation                        | .002        | .494         |
| Expenditure on education                             | .085        | .308         |

regression method was used to evaluate all possible combinations of variables that best explained the pattern of voter apathy. The one with the least akaike's information criterion (AICc), least variance inflation factor (VIF), and highest adjusted R-square was considered the best of all models.

The AICc (1025.02), the Joint *F*-Statistic (39.04), Joint Wald Statistics (132.28), Koenker (BP) Statistics (11.13), and the Jarque-Bera Statistics (5.43) were obtained for the chosen model. All these measures were significant ( $p = .05$  level), except the Jarque-Bera statistics, confirming that the model is unbiased and predicted the pattern of voter apathy appropriately. Whenever the Jarque-Bera statistic is significant ( $p < .05$ ), model predictions are biased, because the residuals are not normally distributed. The derived model provided 84.08% explanation of the variability in pattern of voter apathy (Table 4). However, because the Koenker (BP) statistic was significant, we chose the robust probability coefficient (as is often advocated) to identify important variables that provide significant explanation of voter apathy patterns. A statistically significant Koenker (BP) statistic indicates the presence of model infractions of

Table 4. Ordinary least square regression diagnostics and coefficients summary for voter apathy.

|                                 |           |  |             |
|---------------------------------|-----------|--|-------------|
| Number of observations:         | 37        | Akaike's information criterion (AICc) [d]:       | 1025.014894 |
| Multiple <i>R</i> -squared [d]: | .862948   | Adjusted <i>R</i> -squared [d]:                  | .840843     |
| Joint <i>F</i> -statistic [e]:  | 39.038209 | Prob ( $>F$ ), (5,31) degrees of freedom:        | .000000*    |
| Joint wald statistic [e]:       | 132.27768 | Prob ( $>$ chi-squared), (5) degrees of freedom: | .000000*    |
| Koenker (BP) statistic [f]:     | 11.131956 | Prob ( $>$ chi-squared), (5) degrees of freedom: | .048826*    |
| Jarque-bera statistic [g]:      | 5.430306  | Prob ( $>$ chi-squared), (2) degrees of freedom: | .066195     |

Note: \*Significant at 95% confidence level.

non-stationarity or heteroskedasticity, hence the need to rely on the robust probabilities and Joint Wald statistics to identify variables that are significant in the model development as well as overall model appropriateness (Table 5).

The voter apathy explanatory variables that were significant from the robust statistical coefficients included total male population, percentage unemployment, number of higher institutions of learning, expenditure on household goods, and expenditures on education. These variables were significant ( $p < .05$ ), and the VIF values of the component variables in this model were less than 1.4. Thus, there was no redundancy among the explanatory variables, because VIF value greater than 7.5 often indicates redundancy among explanatory variables (Table 5).

Despite the suitability of the derived model, it under-predicted voter apathy in states such as Kwara, Osun, Ekiti, Lagos, Edo, Anambra, Rivers, Ebonyi, Benue, Taraba, Zamfara, and Borno because the actual number of apathetic voters was higher than the predicted number. The model also over-predicted the number of apathetic voters in Ondo, Delta, Imo, Niger, Kebbi, Kano, Jigawa, Plateau, and Adamawa States (Figure 3). Nevertheless, the model predicted fairly well the number of apathetic voters in the remaining 15 (fifteen) states of the federation. To ensure that the predicted values were free from autocorrelation, the global Moran-I statistics was used to assess the degree of spatial autocorrelation of the predicted residuals. The residuals exhibited a random distributional pattern. The model appeared good because the distribution of the resultant regression residuals were statistically significant (Moran's Index =  $-0.181900$ , Z-Score =  $-1.193104$ ,  $p < .05$ ).

GWR was used to identify best predictors of voter apathy in each state of the federation. In general, male population was a strong predictor of voter apathy in 13 (35.14%) of the 36 states and the FCT, but a weak predictor in most of the states in the eastern part of the country (Figure 4(A)). In these states, there was a positive relationship between voter apathy and male population, such that higher voter apathy was in the states with higher male population. The number of higher institutions of learning predicted voter apathy well in 33 of the 36 states and the FCT (Figure 4(B)). There is a positive relationship between voter apathy and the number of higher education institutions in those states. Expenditure on household goods was also a strong but negative predictor of voter apathy among states in the southwestern and southern part of Nigeria, while it was a weak predictor among states in the northeastern part of Nigeria (Figure 4(C)). It offered a good prediction in 15 (40.54%) of the 36 states and combined favorably with other factors, such as male population and number of higher institutions of learning, to predict voter apathy in those states. Expenditure on education was a very strong predictor of voter apathy in Kebbi, Zamfara, and Sokoto States, while it was a strong predictor in Kwara, Niger, Kaduna, Bauchi, Kano, Katsina, and Jigawa States (Figure 4(D)). It combined favorably well with male population and the number of higher institutions of learning to predict voter apathy among states in the northwestern part of the country.

#### 4. Discussion

Voter apathy manifests in different forms. One of the indicators of voter apathy is the discrepancy between the growth in the number of registered voters and that of the entire population. Obviously, voters' turnout in elections is declining owing to rising apathy among the electorate (Powell et al., 2012). Voter registration has not been growing at a corresponding rate with the rate of population growth. Nigeria's population almost

Table 5. Ordinary least square regression and main drivers of voter apathy.

| Variable                              | Coefficient [a] | Std Error   | t-Statistic | Probability [b] | Robust_SE   | Robust_t  | Robust_Pr [b] | VIF [c]  |
|---------------------------------------|-----------------|-------------|-------------|-----------------|-------------|-----------|---------------|----------|
| Intercept                             | -46878.53       | 177985.3237 | -2.6338     | .013057*        | 154895.0299 | -3.02644  | .004946*      | —        |
| Male population                       | .471853         | .038264     | 12.3313     | .000000*        | .0468       | 10.080347 | .000000*      | 1.252872 |
| Unemployment                          | 7749.54         | 5239.245441 | 1.4791      | .149194         | 4701.3682   | 1.648358  | .109377       | 1.518522 |
| No of higher institutions of learning | 60378.50        | 20183.2946  | 2.9915      | .005405*        | 20878.2278  | 2.891936  | .006943*      | 1.210122 |
| Expenditure on household goods        | -.255148        | .143961     | -1.7723     | .086165         | .1186       | -2.151029 | .039382*      | 1.021033 |
| Expenditures on education             | -1.002923       | .388296     | -2.5829     | .014744*        | .2830       | -3.544075 | .001272*      | 1.375455 |

\* $p = 0.05$ .

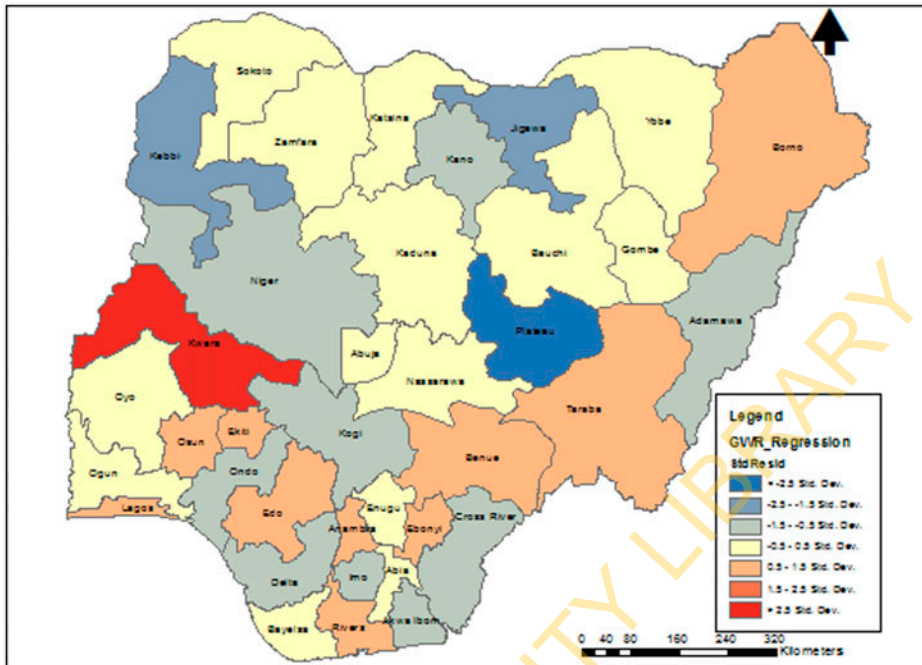


Figure 3. Geographically weighted regression residuals of voter apathy in presidential elections (1999–2011).

doubled between 1979 and 2011, while voters' registration only increased by about 50% within the same period. This could signal apathy among the new generation of Nigerians.

Apart from the observed spatial dependency in voter apathy, voter apathy also varied over time and across different geographical entities. The highest voter apathy was in Lagos, Kano, and Oyo States, while no consistent pattern could be established concerning low voter apathy states. However, except in the 1999 election, when states with the lowest voter apathy were in the northern part of Nigeria, subsequent elections showed that lower voter apathy was mainly noticeable in the southern part of the country, where states such as Bayelsa and Rivers featured prominently. Oil exploration activities take place in the Niger Delta region in southeastern Nigeria and there has been increasing agitation for resource control. Thus, there is a tendency for the people of the region to vote for the party which could promote their increasing control and ownership of resources from the region (Ferree, 2006; Posner, 2005).

Furthermore, no state in the southern part of the country had ever produced a president until the year 2011. However, the region has had opportunities to produce vice presidents. The opportunity that came in 2011 might explain why the entire region became a cold spot of voter apathy. The 2011 presidential election was a landmark, because the president emerged from one of the minority ethnic groups in Nigeria. Ethnic identity might have largely accounted for the cold spots that pervaded the states in the southern part, while no ethnic influence could be inferred in the earlier presidential elections. The voting pattern they exhibited in 2011 can thus be characterised as instrumental ethnic voting.



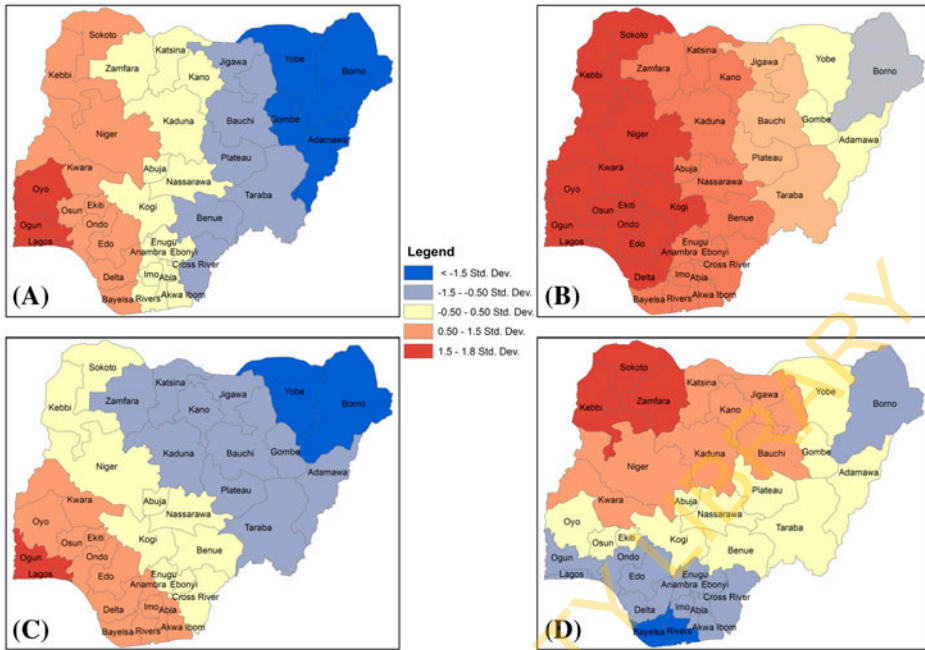


Figure 4. (A) States where male population predicted voter apathy, (B) states where number of higher institutions of learning predicted voter apathy, (C) states where expenditures on household goods predicted voter apathy, and (D) states where expenditures on education predicted voter apathy.

The emergence of the president from the southwestern geopolitical zone in 1999 was not a sufficient reason to encourage large turnout of voters during the election. This lower turnout could have been due to lack of trust in the transition program that followed the long years of military intervention in governance (Birch, 2010; Ochulor, 2010). This lack of trust was further fueled by the institutional arrangement which placed the electoral institutions that supervised elections under the control of the executive, which often affords the ruling party disproportionate access to public funds and media airtime (Hartlyn & Espinal, 2009). In addition, lack of trust in political institutions, low perception of electoral integrity, and the general perception that votes are incapable of influencing government and politics could be responsible for the high voter apathy (see also Chiroro, 2005a).

Inaccessibility of polling stations, inadequate polling station coverage or other logistical challenges encountered by the electorate might have been responsible for the observed associations between population size and voter apathy. The relatively weak negative relationship between voter apathy and unemployment suggests that voter apathy is highest where unemployment is lowest. This could be due to availability of job opportunities arising from the presence of a large number of industries in states with higher voter apathy, such as Lagos, Kano, and Kaduna. Many of the workers do not vote because they do not have the time to register during the voter registration exercise due to the demand of their workplace. However, those that manage to register do not ultimately vote because they often travel to their home states where they cannot vote because it was not where they registered. In addition, the only available ‘free’ day for

private sector workers is Saturday and many of them might choose to rest at home or attend some other social functions instead of going to queue at voter's centres. The long queues, coupled sometime with the inclement weather, often discourage these workers from going to register on Saturdays. All of these put together affect participation of the workers in elections. Consequently, the number of vote cast in states with lower unemployment rate is always lower than the number of registered voters. Thus, economic development may exact a negative influence on voters' turnout (Mfundisi, 2005). The significant positive relationship between voter apathy and GDP also shows that the economically buoyant states recorded higher voter apathy than the economically less buoyant states. Therefore, economic performance has important, and sometimes, counterintuitive, implications for voter apathy (Orman, 2010) although not all the economic-related factors were important in the context of the study area.

Variations in voter apathy across states in Nigeria between 1999 and 2011 were due to differences among states in terms of the population of males, number of higher institutions of learning, and expenditure on household goods and on education (Table 5). Higher voter apathy was noticed in states with higher male population (also linked to the explanation on unemployment) and states with higher numbers of high institutions of learning. The ease with which students can be manipulated and mobilised to foment trouble during election, especially by politicians, is among the reasons why authorities of higher institutions prefer that students are with their parents during elections. The monetary rewards for participating in electoral violence and other malpractices make it attractive to student. This is because of the high unemployment rate and the prevailing poverty which together predispose students to crimes. To reduce crime and violence, higher institutions are always encourage to declare holidays for the students during the voting period. These students registered in the polling units close to their residence in school, but they are disenfranchised since they cannot come back to their various institutions of higher learning to cast their votes on election day. Lagos State, for example, had high voter apathy and it is one of the states with the largest number of males and a substantial number of higher institutions of learning. Comparatively, higher voter apathy for men might have arisen because of the challenges they undergo in the process of providing for their households owing to the harsh economic condition.

Addressing the challenges that hinder men from fully participating in voting may help in reducing voter apathy in western Nigeria. Higher voter apathy was also recorded in states with lower expenditures on household goods and also in those with lower expenditures on education. Designing civic educational materials and approaches, such as linking voting to economic outcomes, which would spur men's participation in voting could help in reducing voter apathy.

The number of higher institutions was a major predictor of voter apathy in the northeastern part of Nigeria. For the region to benefit from the increasing number of higher institutions of learning, students in these institutions would have to be allowed to be in school during the voter registration as well as during the actual election. Youths in higher institutions of learning form the critical mass of the electorate and most times, they are from different parts of the country. Political education and adequate motivation are crucial in ensuring effective participation of the students. In addition, students should be encouraged to register and vote in their respective schools. Authorities should avoid closing schools because of the fear of violence during elections. In addition, the Independent National Electoral Commission (INEC) should also ensure that the processes of voter registration and voting are relatively easier for them because of the demands of their education. This is one of the ways in which the positive linkage

between the number of higher institutions of learning and voter apathy can be realised (Carreras & Castañeda-Angarita, 2013).

The number of higher institutions of learning was the only educational factor that was significant in explaining the pattern of voter apathy among states in Nigeria. The percentage of the population that was above 15 years and literate did not show a significant relationship with voter apathy. Similarly, awareness factors, such as ownership of television and radio sets, were not important statistically in accounting for variations in voter apathy, despite the heavy investment in these media for dissemination of election information. Getting closer to door-to-door civic education campaigns, as often used by political parties, to reach the local people may reduce the need for overdependence by government and non-governmental civic education agencies on radio and television as sources of information about elections.

Furthermore, despite variations in the different measures of poverty among states, none of these measures was significantly correlated with voter apathy, nor did any of the measures feature as an explanatory factor of voter apathy among states. Only two expenditure-related factors, expenditure on household goods, and expenditures on education (both negatively correlated), were among the most significant variables explaining voter apathy. The remaining expenditure factors did not significantly correlate or explain the observed pattern of voter apathy (Table 5). One unexpected conclusion reached was that literacy and poverty did not significantly influence voter apathy. Earlier research identified literacy, poverty, gender, and demography (Carreras & Castañeda-Angarita, 2013; Leighley & Nagler, 1992; Mfundisi, 2005; Milligan et al., 2003; Sondheimer & Green, 2010) as predictors of voter apathy without taking cognizance of variations in voter apathy across different geographic units of investigation. In addition, the overreliance on the use of limited sample survey for such studies on voter apathy may also have influenced conclusion reached. This study, however, showed that variations in socioeconomic and demographic factors across different states in a federation could account for variations in voter apathy. Factors that account for variations in voter apathy differ among states in a federation.

Using the actual election data, therefore, the variation in voter apathy in Nigeria can be attributed to the differences in the male population, number of higher institutions of learning, expenditure on household goods, and expenditure on education as the predictors of voter apathy. Recognising the importance of socioeconomic and demographic diversities across different geographic units within a larger administrative unit would help in addressing voter apathy challenge better. It must, however, be noted that the scale of investigation could have possibly influenced the numbers of predictors identified in the model. Thus, a number of factors can be significant at local levels, while such factors may not be significant at the national level. The negative significant relationship between voter apathy and expenditures on household goods and on education suggests that increasing the economic condition of citizens to be able to afford these expenditures can improve voting and reduce apathy.

## 5. Conclusion

Generally, voter apathy has been on the increase in Nigeria since 2003 and it varied not only over time, but also over space. The use of GIS and GWR made it possible to identify the spatial patterns (clustering) of voter apathy across the Nigerian federation and potential underlying predictors in each state. Increasing apathy may have resulted from the inability of the government, electoral management, and civil society to motivate

eligible voters to register and vote during elections. Distinct spatiotemporal variations exist in the pattern of voter apathy exhibited across different states. The variations in voter apathy across states were mainly a product of the differences in the male population size, number of higher institutions of learning, expenditure on household goods, and expenditure on education. In addition, contiguous states tend to have similar voting patterns in terms of levels of apathetic voters compared to states that are at considerable distance from one another. Thus, voter apathy exhibits a clustered pattern, which shows that factors producing apathy operate across state level.

In addition, the influence of ethnic identity was visible in the pattern of voter apathy, especially in the 2011 election, when the hot spots of voter apathy shifted from the southern part of the country to the southwestern and northern parts. The change during the 2011 presidential election was mainly because the southern part had the opportunity to field someone as a presidential. Therefore, instrumental voting may become one of the most important determining factors of voter apathy, most especially when a person from the ethnic minority aspires to a political office in a multiethnic society, than on actual delivery of economic or political goods (benefits). Rallying support for such a candidate will reduce apathy while boosting voter turnout in his/her regional ethnic stronghold. Therefore, ethnicity and expected benefits from politicians are some of the determinants of voters' choice, particularly among the minority ethnic groups, as also noted by Posner (2005).

Ensuring effective voter participation in elections in Nigeria and other sub-Saharan African countries would therefore require addressing the regionally specific challenges of voter apathy, including those arising from ethnicity-based voting, revealed by spatially explicit analysis of both patterns and drivers. These results showed the need for particular attention in the highly populated and urbanised centres and states with high levels of higher learning institutions (targeting students).

### Notes on contributors

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