# CLUSTERING OF UKRAINIAN REGIONS BASED ON VALUE ORIENTATIONS AND POLITICAL CHOICE OF THE POPULATIONS: METHODOLOGICAL RATIONALE AND ANALYSIS USING COMBINING DATA SOURCES

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*The aim of this study is clustering of administrative-territorial units of Ukraine on the basis of value orientations and the electoral choice of the population of these units. The k-means method is used. Creation of macroregions based on the political orientations of the population is quite widespread, but such approaches have a number of limitations, primarily due to the fact that the list of political leaders or political parties can change significantly in rather short periods of time and because of difficulties with using of several political parties/leaders simultaneously in the analysis. The «value» in this article is defined within Schwartz's theory as desirable goals that go beyond specific situations, differ in importance from each other and are guiding principles in human life. The analysis uses the ten Schwartz's values, which are grouped into four dimensions: «Conservation», «Self-Enhancement», «Self-Transcendence» and «Openness to Change». The data set for this study is a combination of two sources of data – sample survey and electoral statistics. Thus, the data set in this study is formed by a combination of the results of the Ukrainian vote in the Parliamentary elections in 2012 and sample survey – European Social Survey – the latest wave of which was held in Ukraine in 2012. The European Social Survey is the most actual source of data on the value orientations of Ukrainians which is in free access. After 2012 this study in Ukraine was no longer conducted. The main result of this study is the creation of clusters of administrative-territorial units based on the similarity of the results of voting and value orientations of population in these units. The first cluster includes administrative-territorial units, where population has more expressed values of Self-transcendence than in Ukraine as a whole. In the second cluster there are units where population has more expressed values of Self-enhancement and Openness to change. The third cluster is characterized by more expressive values of Self-transcendence and Conservation. Except of different levels of expression values, clusters differ by the level of support of political parties that participated in Parliamentary elections. This approach allows evaluate the received cluster structure in dynamics, use in analysis results of national and local elections in different years. Also it makes clustering space two-dimensional, which enables not only to discover similar administrative-territorial units, but also, for example, to identify groups of parties whose supporters share similar values. Although the article uses data from 2012, the successful application of this approach to the clustering of administrative-territorial units opens up the ways for such clustering on more recent data.*

***Keywords:*** *value, value orientations, political orientations, electoral choice, Schwartz value theory, cluster analysis, k-means.*

*Scopul acestui studiu este gruparea unităților administrativ-teritoriale din Ucraina pe baza orientărilor de valoare și a alegerii electorale a populației acestor unități. Se folosește metoda k-means. Crearea macroregiunilor bazate pe orientările politice ale populației este destul de răspândită, însă astfel de abordări au o serie de limitări, în primul rând datorită faptului că lista liderilor politici sau a partidelor politice se poate schimba semnificativ în perioade scurte de timp și din cauza dificultății de a folosi mai multe politici părțile / liderii în analiză în același timp. «Valorile» din acest articol sunt definite în conformitate cu teoria lui S. Schwartz ca scopuri dorite care depășesc situațiile specifice, diferă una de cealaltă în grade de importanță și sunt principii directoare în viața umană. Analiza folosește cele zece valori Schwartz, grupate în patru sectoare de valoare: «Conservarea», «Afirmarea de sine», «Grijă pentru oameni și natură» și «Deschiderea spre schimbare». Matricea datelor pentru acest studiu este o*

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*combinație a două surse de date – un sondaj prin sondaj și statistici electorale. Astfel, datele stabilite în acest studiu se formează prin combinarea rezultatelor votării populației Ucrainei în alegerile parlamentare din 2012 și printr-un sondaj prin sondaj – Cercetarea Socială Europeană – ultimul val de care sa desfășurat în Ucraina în 2012. Cercetarea socială europeană este cea mai relevantă sursă de date privind orientările valorice ale ucrainenilor, care este disponibilă în mod liber. După 2012, acest studiu în Ucraina nu mai era efectuat. Principalul rezultat al acestui articol este crearea de grupuri de unități administrativ-teritoriale bazate pe similitudinea rezultatelor voturilor și a orientărilor valorice ale populației în aceste unități. Primul grup include unități administrativ-teritoriale, unde populația are valori mai pronunțate de «Grijă pentru oameni și natură» decât în întreaga Ucraina. În cel de-al doilea grup, există zone în care populația are valori mai pronunțate de «Afirmarea de sine» și «Deschiderea spre schimbare». Al treilea cluster se caracterizează prin valori mai pronunțate ale «Grijă pentru oameni și natură» și «Conservarea». Pe lângă diferitele niveluri de exprimare a valorilor, grupurile diferă în ceea ce privește nivelul de sprijin pentru partidele politice care au participat la alegerile parlamentare. O astfel de abordare face posibilă evaluarea structurii clusterului obținută în dinamică, folosirea în analiză a rezultatelor alegerilor naționale și locale pentru anii diferiți. De asemenea, ca urmare a aplicării acestei abordări, spațiul clusterului devine bidimensional, ceea ce permite nu numai găsirea unor unități administrativ-teritoriale similare, dar și, de exemplu, identificarea grupurilor de părți ale căror suporteri împărtășesc valori similare. Începând cu anul 2012, succesul a fost folosit pentru a facilita accesul la clasificări administrativ-teritorială a unităților din perspectiva desfășurării unor astfel de clasificări ale bolilor noi.*

*       **Cuvinte-cheie:** *valori, orientări de valoare, orientări politice, alegeri electorale, teoria valorii lui Schwarz, analiză cluster, k- means.*

*Целью данного исследования является кластеризация административно-территориальных единиц Украины на основе ценностных ориентаций и электорального выбора населения этих единиц. Используется метод k-means. Создание макрорегионов на основе политических ориентаций населения довольно широко распространено, но такие подходы имеют ряд ограничений, в первую очередь из-за того, что список политических лидеров или политических партий может значительно измениться за довольно короткие периоды времени и из-за трудности с использованием нескольких политических партий/лидеров в анализе одновременно. «Ценности» в этой статье определяются согласно теории Ш. Шварца как желаемые цели, которые выходят за рамки конкретных ситуаций, отличаются друг от друга по степени важности и являются руководящими принципами в жизни человека. В анализе используются десять ценностей Шварца, которые сгруппированы в четыре ценностные секторы, а именно: «Сохранение», «Самоутверждение», «Забота о людях и природе» и «Открытость к изменениям». Массив данных для этого исследования является комбинацией двух источников данных – выборочного исследования и электоральной статистики. Таким образом, массив данных в этом исследовании формируется путем объединения результатов голосования населения Украины на Парламентских выборах 2012 года и выборочного опроса – Европейского социального исследования – последняя волна которого была проведена в Украине в 2012 году. Европейское социальное исследование является наиболее актуальным источником данных о ценностных ориентациях украинцев, которое находится в свободном доступе. После 2012 года это исследование в Украине больше не проводилось. Основным результатом данной статьи является создание кластеров административно-территориальных единиц на основе схожести результатов голосования и ценностных ориентаций населения в этих единицах. Первый кластер включает в себя административно-территориальные единицы, где население имеет более выраженные ценности «Заботы о людях и природе», чем в целом по Украине. Во втором кластер входят территории, где население имеет более выраженные ценности «Самоутверждения» и «Открытости к изменениям». Третий кластер характеризуется более выраженными ценностями «Заботы о людях и природе» и «Сохранения». Помимо разных уровней выраженности ценностей, кластеры различаются по уровню поддержки политических партий, которые участвовали в Парламентских выборах. Такой подход позволяет оценивать полученную кластерную структуру в динамике, использовать в анализе результаты*

*общенациональных и местных выборов за разные годы. Также, в результате применения данного подхода, кластерное пространство становится двумерным, что позволяет не только обнаружить похожие административно-территориальные единицы, но и, например, выявить группы партий, сторонники которых разделяют схожие ценности. Хотя в статье использованы данные 2012 года, успешное применение данного подхода к кластеризации административно-территориальных единиц открывает перспективы для проведения подобной кластеризации на более новых данных.*

    **Introduction.** Creation of macroregions on the basis of administrative-territorial units is quite common among sociological researches. The basis for clustering may be different, but the resulting cluster structure gives the researcher a new variable – «macroregion», which can be used in a variety of explanatory and predictive models. It's no exception for political orientations and electoral choice: these variables quite often are used in approaches to regionalization of the territory based on the political preferences of the population or on the results of voting at national or local elections. With this approach, the «macroregion» can serve as a powerful explanatory variable in electoral models, and it is possible to predict the electoral choice of the population through the regional structure of political preferences.

    The approach to regionalization of the territory of Ukraine on the basis of political orientations has been widespread for many years among Ukrainian sociologists. In fact, based on the results of several Parliamentary and Presidential elections, it is indeed possible to see a certain division into regions based on electoral choices. Certain stereotypes concerning voting in different regions of Ukraine are repeatedly broadcast in the mass media and in scientific publications. But nowadays there are more and more ideas about the artificial construction of such a regional division. The simplified understanding of the division of Ukraine into two split regions (Western and Eastern) is used not as an explanatory variable in scientific research, but in order to manipulate public opinion. For example, the clear segmentation of the electoral space of Ukraine on the basis of civilizational and, consequently, foreign policy characteristics, was first used as a mobilization electoral technology during the 2004 Presidential campaign [12, p.291]. The basis of many studies of the relationship between political orientations and the place of residence of the population is the concept of «regional identity». The main assumption here is about existence of a certain regional identity that can be more powerful than, for example, national or ethnic. And identity affects the range of orientations, attitudes and preferences of the population living in these territories. Within this approach, the term «regional voting» is often used [13]. The factor that influences the electoral choice is the cultural characteristics of the population, which, according to this approach, are different in different regions. There are differences in foreign policy orientations, language, and national heroes. Such regional identities are the product of historical development, settlement, educational and age structure of the population, which are rooted in habits, lifestyles, perceptions and explanations by individuals of reality, their social and economic status [15, p.32]. Another approach to the role of residence in explaining political orientations and electoral choices is to distinguish such a key factor as the role of political elites.

    One more approach to the use of spatial data in investigations of Ukrainians political orientations is the construction of the opposition «Center-Periphery». Some researchers assume that the population's readiness for change is a factor that influences the difference in voting between cities and villages. So, people in cities may easier to learn new trends and adapt to change. In political preferences this can be manifested, for example, at the highest level of conservatism among population in villages compared with urban residents [13, p.58]. In addition, factors affecting the voting outcomes of this approach can be the standard of living and the level of education of the population, the density of social networks, specific problems and needs that are significantly different for urban and rural populations. In the sociological literature the region is considered, first of all, as

the space of a certain social structure, the organization of power and cultural traditions, which gives grounds for sociologists to speak of a territorially differentiated association of people [14, p.94].

Thus, for modern Ukrainian researches of political orientations it is actual to develop new approaches to the use of spatial data in the study of political orientation and electoral choices of the Ukrainian population. One such approach can be the combination of electoral choice and value orientations for clustering administrative-territorial units to create macroregions. Value orientations are more stable than political ones, therefore, such a combination makes the cluster structure more reliable. Also, the combination of values and voting results gives an opportunity to evaluate the cluster structure in dynamics, combining the results of national and local elections in different years with the value orientations of Ukrainians. In addition, the values reflect the cultural and historical features of the region, which increases the validity of such clustering.

**The value theory.** There are two approaches to the definition of values in social sciences: "values" can bee defined as characteristics of individuals or social groups. An approach to the interpretation of values as individual characteristics was formed within psychology, where values were used as a variable through which human behavior can be explained. For example, Allport and Vernon define values as individual's basic convictions about what is and is not important in his/her life. [1, p.505]. In Rokeach's definition of values, as well as Allport's and Vernon's, the central element is conviction. Rokeach defined the value concept as «an enduring belief that a specific mode of conduct or end-state of existence is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence». [7, p.5]. Rokeach distinguished two main types of values: terminal and instrumental values [11, p.154]. Terminal values refer to desirable and end-state existence, the goals that a person would like to achieve during them. On the other hand, instrumental values refer to preferable modes of behavior, means of achieving the terminal values. The Rokeach theory of individual values was gradually superseded by Schwartz's theory of basic values. Today Schwartz's approach, with the approach of R. Inglehart, is one of the most authoritative method of measuring values, including both national and international comparative studies (for instance, European Social Survey or World Value Survey). According to S. Schwartz's values theory, values are defined as transsituational goals, varying in importance, that serve as guiding principles in the life of a person or group [9, p.903].

It is quite right to agree with Allport's, Vernon's, Rokeach's and Schwartz's statements, who consider values to be basic beliefs and guiding principles in human life, because in this case, values can be considered as an integrative element that combines the distinct attitudes and orientations of a person in relation to various spheres of society's life, including in the sphere of politics.

But values can also be defined as characteristics of social groups. With such an approach, values express an understanding of what is considered acceptable in a society and desirable in its culture, that is, certain cultural ideals. Cultural values form and justify individual and group beliefs, actions and goals, these values are the basis of institutional norms and daily practices. For example, a cultural value emphasis on success and ambition may be reflected in and promote highly competitive economic systems, confrontational legal systems, and child-rearing practices that pressure children to achieve [8, p.139]. Kluckhohn also is one of the researches who interpret values as characteristics of social groups. He assumes that people have certain biological features and characteristics that are the basis for the development of culture, and that people consider their own beliefs and practices to be natural, and those beliefs and practices that differ from their own are strange and even false. He defines value as a conception, explicit or implicit, distinctive of an individual or characteristic of a group, of the desirable, which influences the selection from available modes, means, and ends of action [3, p.362]. Schwartz, in addition to the theory of individual values, also developed an approach to measuring cultural values. The idea underlying this approach is similar to that of Kluckhohn: Schwartz also assumes that cultural values are manifested in how societies oppose the basic problems in daily human activity. People must recognize these problems, plan responses to them, and motivate one another to cope with them [8, p.140]. Hofstede focused extensively on national-level patterns of values, arguing that values form a stable portion of national culture. [3, p.378]. Hofstede in his approach to the definition of values tries to combine both individual and cultural values: he thinks that values are simultaneously characteristics of individuals and communities. He defines values as the tendency to choose a certain mode of action among other possible ways [4, p.19].

In our opinion, understanding of values as beliefs and ideas inherent in social formations may be helpful to the understanding of values as individual characteristics.This perspective opens up the way for the analysis of values not only at the level of an individual, but also at the level of small or large social groups, for example, at the level of the regions of the country.

**Data and methods.** In this study the correlation between electoral choice and value orientations is researched using data of sample survey and the results of the voting of the Ukrainian population on the Parliamentary elections. The results of the voting in the elections are presented on the site Central Election Commission, this data is aggregated to the level of polling stations. The interpretation of the concept of «value» is based on S. Schwartz approach. Accordingly, values are defined as transsituational goals, varying in importance, that serve as guiding principles in the life of a person or group [9, p.903]. Schwartz's main innovation, in comparison with earlier approaches to the definition of values, is the assumption that there is a particular structure between the different values, which may be universal for different cultures. Schwartz suggests that this structure has the form of circular motivation continuum. This model has some special features [10, p.110]:

- adjacent values in the circle are motivationally compatible;
- values become less compatible as the distance between them around the circle increases;
- values on opposite sides of the circle express conflicting motivations.

In the initial version of the Schwarz's value theory it is proposed to include in the circular continuum 10 basic human values that can be reduced to 4 dimensions. According to Schwarz's model dimension «Conservation» consists of values «Security», «Conformity» and «Tradition», the opposite dimension «Openness to change» includes values «Stimulation», «Self-Direction» and «Hedonism». Dimension «Self-enhancement» consists of values «Power» and «Achievement», and the opposite dimension «Self-transcendence» includes values «Universalism» and «Benevolence». On the basis of this model Schwarz created two questionnaires – The Schwartz Value Survey and The Portrait Values Questionnaire. For analysis of value orientation in this study we use The Portrait Values Questionnaire. This questionnaire includes 21 value portraits of abstract persons. Respondent should decide how he or she is similar to this portraits using scale with 6 items: from «very much like me» to «not like me at all» [9, p.10]. There are examples of such portraits in Table 1.

<div align="right">

**Table 1**

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**Indicators using for measuring the value «Security» in The Portrait Values Questionnaire**

| Value | Indicators in The Portrait Values Questionnaire |
|---|---|
| **Security** | It is important to him/her to live in secure surroundings. He/she avoids anything that might endanger his/her safety. |
| | It is important to him/her that the government ensures his/her safety against all threats. He/she wants the state to be strong so it can defend its citizens. |

*Source: Elaborated by the author.*

The Portrait Values Questionnaire is included to the questionnaire of the European Social Survey. Ukraine took part in this project from 2004 to 2012. The European Social Survey is the most actual source of data on the value orientations of Ukrainians which is in free access. Last Ukrainian wave of European Social Survey, conducted in 2012, is used to analyze the value orientations in this study. As a variable, which indicate the electoral choice of the population, in this study is used the results of the voting in the Parliamentary elections held in 2012. Only political parties that gain more than 1% of the vote are selected for analysis. As noted above, The Portrait Values Questionnaire includes 21 indicators for measuring 10 values. Each of these portraits respondent estimates from 1 («very much like me») to 6 («not like me at all»). For each portrait the arithmetic mean is calculated, and then this indicator was subtracted from each value index. Such a calculation technique makes it possible to overcome the problem that some respondents are inclined to identify all the portraits as very much like to him or her. Similarly, four value dimensions are formed: «Conservation», «Self-transcendence», «Openness to change» and «Self-enhancement». We use these four dimensions to simplify interpretation of values.

Thus, the data set in this study is formed by a combination of the results of the Ukrainian vote in the Parliamentary elections in 2012 and sample survey – European Social Survey – the latest wave of which was held in Ukraine in 2012. Such data sets have a number of features. Working with statistical data we usually don't have information on individual level, just aggregated data. In the electoral statistics used in this study, polling station, which, depending on size, can represent the results of voting from ten voters to almost three thousand, is the unit of analysis. On the other hand, in sample survey there is data on individual level, but, in the same time, there are limited opportunities to identify the domicile of the respondents. Using data set of European Social Survey, we can identify only region and the type of settlement (urban or rural). The data set of the European Social Survey is aggregated at the region level, and the arithmetic mean for four value dimensions is calculated. These results are attached to an array of voting results.

**Results.** In this study we classify administrative-territorial units on the basis of value orientations and electoral choice of population in these units. Accordingly, the **hypothesis** is that there is a statistically significant correlation between the value orientations and the electoral choice of the population of Ukraine at the regional level. To test this hypothesis, the Pearson correlation coefficient is calculated between the expressiveness of the values of «Conservation», «Self-transcendence», «Openness to change» and «Self-enhancement» and the results of voting for political parties at the 2012 Parliamentary elections, the results are presented in Table 2.

**Table 2**

### Correlation coefficients between voting for political parties and the expressiveness of value orientations

| Share of party | Value orientations | | | |
|---|---|---|---|---|
| | Self-enhancement | Self-transcendence | Openness to change | Conservation |
| «Partiya Regioniv» | -0,15** | 0,13** | -0,07** | -0,06** |
| «Batkivshchyna» | 0,13** | -0,09** | -0,10** | 0,07** |
| «UDAR» | 0,13** | -0,10** | 0,06** | -0,09** |
| Communist Party of Ukraine | -0,10** | 0,09** | 0,08** | -0,09** |
| «Svoboda» | 0,02** | -0,05** | -0,14** | 0,18** |
| Party of N. Korolevskaya «Ukraina -Vpered!» | 0,02** | 0,004 | -0,05** | -0,08** |
| «Nasha Ukraina» | 0,17** | -0,15** | -0,04** | 0,03** |
| Radical Party of O. Lyashko | 0,11** | -0,20** | 0,13** | -0,06** |

    ** the correlation is significant at the 0,01
*Source: Elaborated by the author.*

Before the interpretation of the correlation coefficients, it is necessary to provide information on the parties who participated in the 2012 Parliamentary elections. Ideological differences between parties in the Ukrainian political space are practically absent. It is possible to note only the left orientation of the Communist Party, as well as the right radical orientation of the «Svoboda». But a differential criterion in this case may be a foreign policy vector. Thus, the «Partiya Regioniv», the Communist Party and the Party of N. Korolevskaya support the eastern foreign policy vector. While the other five parties support the western foreign policy vector. In addition, the «Partiya Regioniv» and the Communist Party created a coalition in 2010-2012. At the same time, a coalition, which was formed in 2014, included the «Batkivshchyna», «UDAR» and «Svoboda».

Based on the correlation coefficients, we can confirm the hypothesis about statistically significant relationship between expressiveness of value orientations and the level of support for political parties. Coefficients are not high, but the reason of this is indirect influence value orientations on electoral choice [5; 2; 6]. Whereas the correlation between value orientations and electoral choice is confirmed, this allows clustering administrative-territorial units based on these two variables. The division of administrative-territorial units into macroregions in this study is proposed to be carried out by cluster analysis using the k-means method. Coordinates for cluster centers are based on the

correlation between the level of support for political parties and the expressiveness of value orientations, divided into four dimensions: «Conservation», «Self-transcendence», «Openness to change» and «Self-enhancement». If a political party has a statically significant positive correlation with one of the value dimension, then the cluster center is given the maximum values for the share of this party, and for this value dimension. If this political force also has a statistically significant negative correlation with some value dimensions, the cluster center is assigned the minimum value for these sectors. The following cluster structure is shown in the Table 3.

**Table 3**

**Initial cluster centers based on Ukrainians value orientations
and the results of the 2012 Parliamentary elections**

|  | cluster №1 | cluster №2 | Cluster №3 |
|---|---|---|---|
| Level of support of the «Partiya Regioniv» | max |  |  |
| Level of support of the Communist Party of Ukraine | max |  |  |
| Level of support of the Party of N. Korolevskaya «Ukraina -Vpered!» | max |  |  |
| Level of support of the «Batkivshchyna» |  | max |  |
| Level of support of the «Nasha Ukraina» |  | max |  |
| Level of support of the «Svoboda» |  |  | max |
| Level of support of the «UDAR» |  | max |  |
| Level of support of the Radical Party of O. Lyashko |  | max |  |
| Self-enhancement values | min | max |  |
| Self-transcendence values | max | min |  |
| Openness to change values |  |  | min |
| Conservation values |  |  | max |

*Source: Elaborated by the author.*

For example, the first cluster includes administrative-territorial units, which are characterized by a high level of support for the «Partiya Regioniv» and Communist Party (the maximum values for the shares of these parties for this cluster center), the high level of values «Self-transcendence» (the maximum value for the cluster center) and low level of «Self-enhancement» values (the minimum value for a cluster center). Similarly, two other clusters are formed. Cluster analysis is done using k-means. The final cluster centers are shown in the Table 4.

**Table 4**

**Final cluster centers based on Ukrainians value orientations
and the results of the 2012 Parliamentary elections**

|  | cluster №1 | cluster №2 | cluster №3 | arithmetic mean for whole data set |
|---|---|---|---|---|
| Level of support of the «Partiya Regioniv» | 0,447 | 0,181 | 0,145 | 0,271 |
| Level of support of the Communist Party of Ukraine | 0,217 | 0,095 | 0,065 | 0,133 |
| Level of support of the Party of N. Korolevskaya «Ukraina -Vpered!» | 0,017 | 0,014 | 0,012 | 0,014 |
| Level of support of the «Batkivshchyna» | 0,146 | 0,352 | 0,398 | 0,287 |
| Level of support of the «Nasha Ukraina» | 0,005 | 0,017 | 0,017 | 0,013 |
| Level of support of the «Svoboda» | 0,027 | 0,123 | 0,175 | 0,100 |
| Level of support of the «UDAR» | 0,103 | 0,156 | 0,152 | 0,135 |
| Level of support of the Radical Party of O. Lyashko | 0,008 | 0,025 | 0,010 | 0,015 |
| Self-enhancement values | -0,246 | -0,013 | -0,319 | -0,174 |
| Self-transcendence values | 0,447 | 0,226 | 0,501 | 0,375 |
| Openness to change values | -0,438 | -0,293 | -0,600 | -0,422 |
| Conservation values | 0,227 | 0,111 | 0,398 | 0,224 |

*Source: Elaborated by the author.*

Thus, the first cluster includes administrative-territorial units, where population has more expressed values of Self-transcendence than in Ukraine as a whole, as well as a significantly higher level of support for two parties – «Partiya Regioniv» and Communist Party. In the second cluster there are units where population has more expressed values of Self-enhancement and Openness to change, and the level of support of three parties («Batkivshchyna», «Nasha Ukraina» and «UDAR») is higher than in Ukraine as a whole. The third cluster is characterized by more expressive values of Self-transcendence and Conservation, as well as a higher level of support for the «Svoboda».

Distribution of administrative-territorial units by clusters is visualized on Figure 1.



- cluster №1
- cluster №2
- cluster №3

**Figure 1. Clustering of the administrative-territorial units of Ukraine on the basis of value orientations and electoral choice of the population in these territories**
*Source: Elaborated by the author.*

The first cluster has clear geographic boundaries: the administrative-territorial units applied to this cluster are concentrated in the southeastern part of Ukraine. The second and third clusters do not have clear geographic boundaries and intersect with each other, which can be explained by the correlation between rates of political parties.

**Conclusions.** This study shows the potential of combining two data sources: sample survey and electoral statistics. Such data sets have a number of features. Working with statistical data we usually don't have information on individual level, just aggregated data. On the other hand, in sample survey there is data on individual level, but, in the same time, there are limited opportunities to identify the domicile of the respondents. As a result, value orientations, measured in European Social Survey, were aggregated at the region level for combining with results of the Ukrainian vote in the 2012 Parliamentary elections.

The main result of this study is the creation of clusters of administrative-territorial units based on the similarity of the results of voting and value orientations of population in these units. The approach to constructing macroregions based on the political preferences of the population is quite widespread. With this approach, the macroregion is represented as an explanatory variable in electoral models. But such an approach has a number of limitations, primarily due to the fact that the list of political leaders or political parties can change significantly in rather short periods of time.

On the same time, value orientations, measured according to standardized methods, can be compared in dynamics. In addition, the study of human values proves that value orientations are more stable than political orientations or electoral choice, which makes the resulting cluster structure more

reliable. The combination of values and results of voting enables to evaluate the received cluster structure in dynamics, combining the results of national and local elections in different years with the value orientations of Ukrainians. Merging of value orientations and voting results, makes the clustering space two-dimensional. This enables not only to discover similar administrative-territorial units, but also, for example, to identify groups of parties whose supporters share similar values. In addition, the values reflect the cultural and historical features of the region, which increases the validity of such clustering.

So, the combination of two sources of data, electoral statistics and a sample survey gives opportunities for expanding existing knowledge both on values and political orientations, and on the relationships between these variables. Using values in cluster analysis make resulting cluster structure more valid and reliable. In addition, one of the perspectives for future researches is the possibility of clustering of political actors themselves based on the value orientations of their supporters. But this approach also has a number of limitations, which are primarily related to combining data from different sources. Since the value orientations were calculated at the level of the regions, the interpretation of the results can be made only at the aggregated level and does not apply to the level of individuals. One of the perspectives for further research is to increase the accuracy of aggregation of data from two sources, for example, by taking into account not only the region but also the type of settlement.

But, at the same time, despite the fact that the article uses data of 2012, the results of the analysis do not lose their relevance, since they demonstrate the potential of using simultaneously values and political orientations for the clustering of administrative-territorial units. The successful application of such approach on data of 2012 opens up the ways for conducting such clustering on more recent data.

Thus, existing approaches to clustering of administrative-territorial units mainly involve one-dimensional space, which complicates using of several political parties/leaders simultaneously in the analysis. Also, within such approaches it is quite difficult to compare the cluster structure in dynamics, such as political actors can change very quickly, and, in the result, common basis for clustering disappears. The approach presented in this paper makes it possible to combine and use in the analysis several political actors simultaneously. In addition, using of value orientations makes it possible to make comparisons in time, since values become the common basis for clustering even in the case of different political actors. Also, using of values makes it possible to take into account, in addition to political orientations, the cultural characteristics of the population of the analyzed areas.

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