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Factors Differentiating Poles' Attitudes Towards Social Relations – a Spatial Approach

Abstract: The research focuses on Poles' attitudes towards selected aspects associated with social relations. Responses to the following 6 statements were examined: 1 – People try to help others above all, 2 – Homosexuals should be allowed to live according to their beliefs, 3 – Foreigners have too much to say in our country, 4 – Some people are worth more than others, 5 – Some groups of persons are not worthy of respect, 6 – We should seek to make the income of all persons more or less equal. The first aim of the study was to check how the level of agreement with those statements was distributed spatially in terms of districts. Then it was checked whether those attitudes were differentiated by 8 characteristics describing Poles: sex, marital status, education level, health status, participation in church services, age and income level, also taking into account the spatial aspect. Finally, regression models (classical and spatial) were constructed to check whether several features describing districts (rather than individual respondents) could help to build a model explaining why in some regions the population agreed with the statements more and in other areas less. The data needed for the analysis were taken from the nationwide study entitled "Social Diagnosis" and all calculations were carried out in the PQStat and Geoda programmes.

Keywords: spatial statistics, social attitudes

JEL: C21, C31

1. Introduction

Man as a social being lives in the environment of other people towards whom he exhibits different attitudes: from enormous friendliness to hostility, from admiration for others' successes to unhealthy jealousy. Quite often, man also divides other people into better or worse ones (recognising some people as more worthy, showing them greater respect). Some of us have more trust for our neighbour, others do not have it at all. Finally, as people, we are also different in terms of approval for otherness and our attitude towards people of foreign origin. All such attitudes and beliefs shape our later behaviour, manifesting even at the electoral ballot-boxes. Learning about these attitudes is therefore extremely important from the point of view of social policy.

Which attitudes and beliefs exactly will be analysed was determined by the availability of data. As part of the nationwide social research entitled "Social Diagnosis", Poles were asked about various issues related to their household and in a separate questionnaire they assessed their lives. As part of this second questionnaire, they were asked to respond to the list of 20 statements about themselves (i.e. *I would like to look good and attractive*), the functioning of the state (i.e. *Common-law relationship should be legalised in Poland*), general beliefs (i.e. *You cannot raise children well without corporal punishment*), but from the point of view of this article, the following six issues were the most important, as they are related to the social sphere: 1 – People try to help others above all, 2 – Homosexuals should be allowed to live according to their beliefs, 3 – Foreigners have too much to say in our country, 4 – Some people are worth more than others, 5 – Some groups of persons are not worthy of respect, 6 – We should seek to make the income of all persons more or less equal. Respondents could choose one of seven answers to such questions: definitely not, no, rather not, neither yes nor not, rather yes, yes, definitely yes.

In the analysis of the attitudes of Poles towards social relations, three research goals were set: firstly, to recognise the spatial diversity of Poles' beliefs and attitudes in terms of districts. Secondly, to identify the spatial diversity of differences in these attitudes divided into two categories of selected demographic and social features:

1) gender (comparison of men's attitudes and women's attitudes),
2) marital status (comparison of singles' attitudes and married persons' attitudes),
3) education (comparison of attitudes of people with tertiary education and people without tertiary education),
4) employment status (comparison of attitudes of working people and the unemployed/professionally inactive),
5) health status (comparison of attitudes of healthy/fit people and people with disabilities/with physical limitations),

6) participation in church services (comparison of attitudes of people not participating at all and people participating at least once a month),
7) age (comparison of attitudes of young people <under 40 years old> and older people <40 years and more>),
8) income (comparison of attitudes of people with low income <up to 1500 PLN> and people with "high" income <over 1500 PLN>).

The third research task was to identify what demographic and socioeconomic factors significantly differentiate social attitudes, but from the perspective of territorial units (districts), not respondents. The dependent variables describing these districts were the percentages of population showing the attitudes mentioned earlier, and the following independent variables were used:

1) gender (the percentage of women in a given district),
2) marital status (the percentage of married couples in a given district),
3) education level (the percentage of people with tertiary education in a given district),
4) employment status (the percentage of working people in a given district),
5) health status (the percentage of fit persons in a given district),
6) participation in church services (the percentage of people participating in such services at least once a month in a given district),
7) age (the percentage of people aged at least 40 in a given district),
8) income (the percentage of people with income higher than 1500 PLN in a given district).

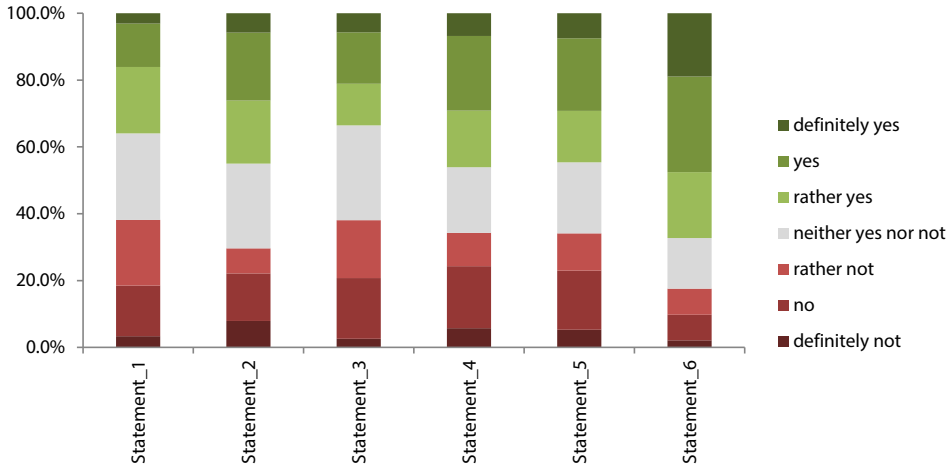
For the implementation of all these three research purposes, data from the nationwide social research entitled "Social Diagnosis" were used concerning the year 2015. Due to the fact that not all respondents always answered all the questions (perhaps they did not want to reveal some of their attitudes), the number of respondents for each of the aspects examined is not always the same, but it fluctuates around 22,000.

The study focuses on analysing districts due to the fact that it was recognised that the voivodships would be too large territorial units to note interesting regularities, while the communes were too small statistical units which in the "Social Diagnosis" study were sometimes represented only by a few people, hence it would not be possible to draw reliable conclusions. In turn, districts were quite numerously represented (the average number of respondents per district was 33 people), hence it was considered to be an appropriate area of analysis (more detailed than the voivodship, but not too detailed as the commune).

The results were elaborated using selected methods of spatial statistics and econometrics: the global and local Moran statistics and spatial autoregression models (SLM and SEM).

2. Research results

The first step of the analysis was to look at the structure of the answers to the questions concerning 6 statements related to the beliefs and attitudes of Poles. The distribution of these answers is shown in Figure 1. It can be seen that the most positive answers (from "rather yes" to "definitely yes") occurred in the case of statement no. 6: "We should seek to make the income of all persons more or less equal", in turn, the most negative indications (from "rather not" to "definitely not") in the case of statement no. 1 (People try to help others above all) and 3 (Foreigners have too much to say in our country).



Statement_1: People try to help others above all
Statement_2: Homosexuals should be allowed to live according to their beliefs
Statement_3: Foreigners have too much to say in our country
Statement_4: Some people are worth more than others
Statement_5: Some groups of persons are not worthy of respect
Statement_6: We should seek to make the income of all persons more or less equal

Figure 1. The structure of answers to six questions related to attitudes of Poles towards social relations

Source: own elaboration based on the Social Diagnosis database

Then, treating those answers as the implementation of the variable "agreement with a given statement" expressed on a quantitative scale from 1 (strongly disagree) to 7 (strongly agree), Figure 2 was prepared, which shows the average value of such a measure. These averages confirm the observations in Figure 1 that Poles mostly agree with statement no. 6: We should seek to make the income of all persons more or less equal. Subsequently, the spatial diversity of responses to the 6 studied aspects related to social attitudes (Maps 1–6) was studied. This was the first of three research goals. A common colour legend (placed under the maps) was used for all the maps to show differences in the level of correspondence between

individual statements. Map 6 has the darkest colour because among Poles statement no. 6 has the highest percentage of positive answers.

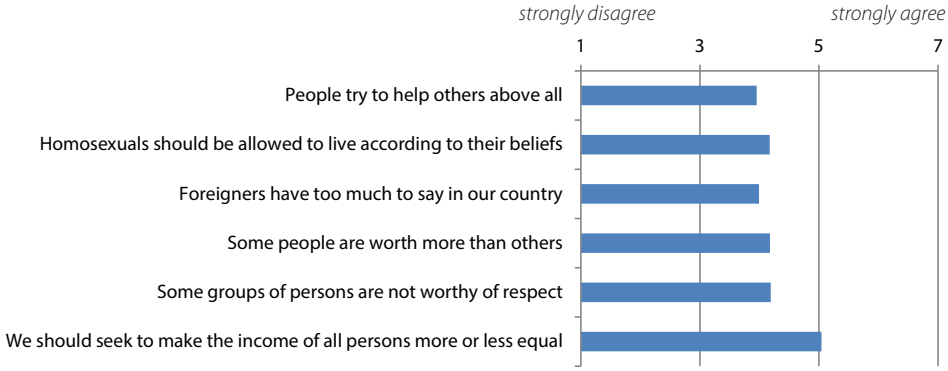
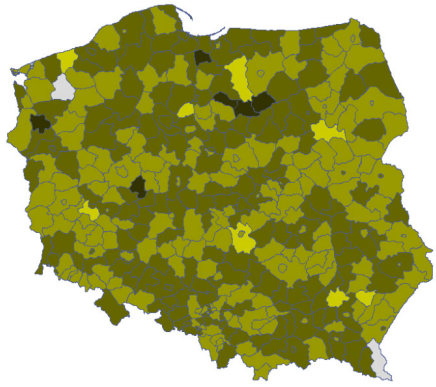


Figure 2. The average level of Poles' agreement with 6 statements related to attitudes towards social relations

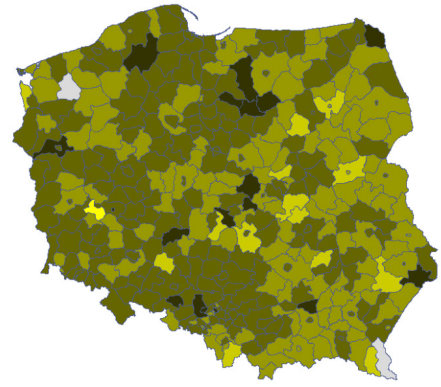
Source: own elaboration based on the Social Diagnosis database

Choosing from other interesting regularities, it can be seen that in the case of statement no. 2 (Homosexuals should be allowed to live according to their beliefs), on average, higher scores of agreement were achieved by the inhabitants of Western Poland, and for statement no. 3 (Foreigners have too much to say in our country) the situation was reversed – a higher degree of agreement with this statement was observed in the east of the country.



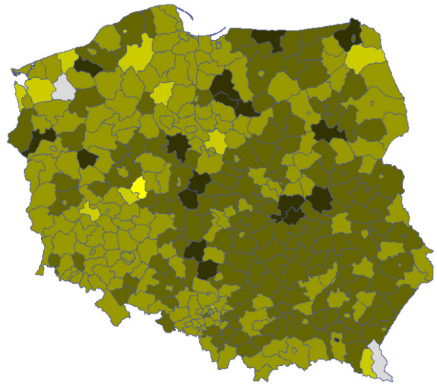
Map 1. Spatial differentiation of the average level of acceptance for the statement: People try to help others above all

Source: as in Figure 1



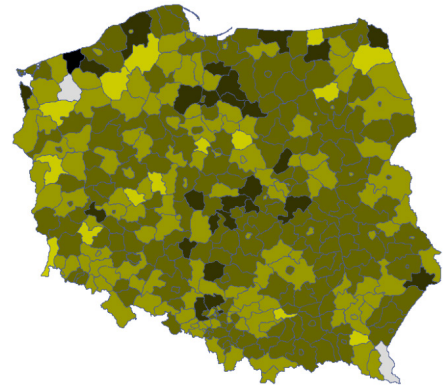
Map 2. Spatial differentiation of the average level of acceptance for the statement: Homosexuals should be allowed to live according to their beliefs

Source: as in Figure 1



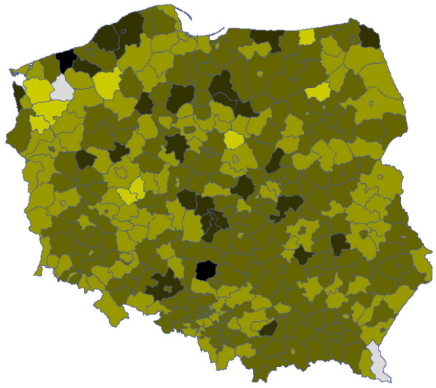
Map 3. Spatial differentiation of the average level of acceptance for the statement: Foreigners have too much to say in our country

Source: as in Figure 1



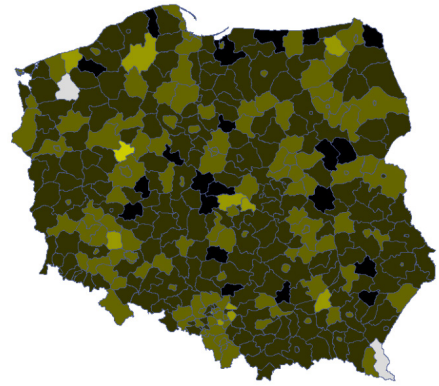
Map 4. Spatial differentiation of the average level of acceptance for the statement: Some people are worth more than others

Source: as in Figure 1



Map 5. Spatial differentiation of the average level of acceptance for the statement: Some groups of persons are not worthy of respect

Source: as in Figure 1



Map 6. Spatial differentiation of the average level of acceptance for the statement: We should seek to make the income of all persons more or less equal

Source: as in Figure 1

Legend for the average level of agreement with 6 analysed statements:

1–2 2–3 3–4 4–5 5–6 6–7

Subsequently, it was checked whether the distributions of the average degree of agreement with those six individual statements could be considered as random or whether there were some regularities in those distributions. For this purpose, **Moran's global statistic** was used. It checks whether the distribution of average level of agreement with a particular statement can be consid-

ered as random (Moran's *I* statistic equals to 0) or whether there are any clusters in this topic (Moran's *I* statistic other than 0). The formula for Moran's statistics is as follows (Suchecka, 2014):

$$I = \frac{\sum_{i=1}^{n}\sum_{j=1}^{n} w_{ij}(x_i-\overline{x})(x_j-\overline{x})}{S_0\sigma^2},$$

where:
n – the number of spatial objects (the number of points or polygons),
x_i, x_j – values of variables for the objects being compared,
$\overline{x}$ – the average value of the variable for all objects,
w_{ij} – elements of a spatial weight matrix (a matrix of weights standardised by rows to one),
$S_0 = \sum_{i=1}^{n}\sum_{j=1}^{n} w_{ij}$,
$\sigma^2 = \frac{\sum_{i=1}^{n}(x_i-\overline{x})^2}{n}$ – variance.

To determine the matrix of spatial weights, a Queen-type neighbourhood was used. An alternative to Moran's statistics is Geary's formula, which does not include the difference of each variate from the mean but rather each variate from all other variates, but in this study it was decided to use more popular statistics – Moran's one.

The Z-test calculated on the basis of expected *I* and the variance of *I* verifies the null hypothesis of randomness of the distribution. Assuming the validity of this hypothesis, the results of this test assume a standardised normal distribution, and the test is calculated as follows (Suchecka, 2014):

$$Z = \frac{I - E(I)}{\sqrt{\mathrm{var}(I)}},$$

where:
I – Moran's global statistic,
$E(I) = \frac{-1}{n-1}$ – expected I,
var(I) – variance of I.

Table 1 shows that distributions of the average level of agreement with all the statements can be considered as random (p-value does not exceed the accepted level of significance 0.05). For all the statements, spatial correlations are positive (global Moran's *I* statistic greater than 0), which indicates the existence of the so-called clusters, i.e. areas merging some/several districts where the average degree of agreement with a particular statement is strongly similar to other districts.

Examples of such correlations in the form of clusters are shown on Maps 7–12, which present the distribution of spatial regimes (districts where in comparison with other ones they border, there is a great similarity or dissimilarity of the average level of agreement with the analysed statements[1]).

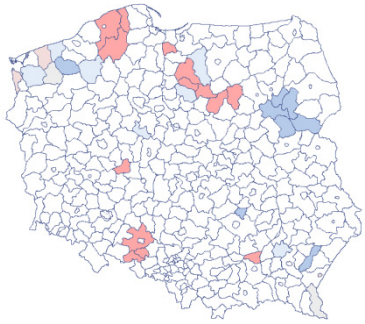
Table 1. Results of studying spatial random distributions of the average level of agreement with 6 analysed statements

Statement	Number of districts	Moran's *I*	Expected *I*	Variance of *I*	Z-statistic	*p*-value
People try to help others above all	377	0.079847	–0.00266	0.001195	2.386397	0.017014
Homosexuals should be allowed to live according to their beliefs	377	0.191504	–0.00266	0.001195	5.615963	< 0.000001
Foreigners have too much to say in our country	377	0.190208	–0.00266	0.001195	5.578475	< 0.000001
Some people are worth more than others	377	0.112616	–0.00266	0.001195	3.334218	0.000855
Some groups of persons are not worthy of respect	377	0.132019	–0.00266	0.001195	3.895421	0.000098
We should seek to make the income of all persons more or less equal	377	0.125829	–0.00266	0.001195	3.716377	0.000202

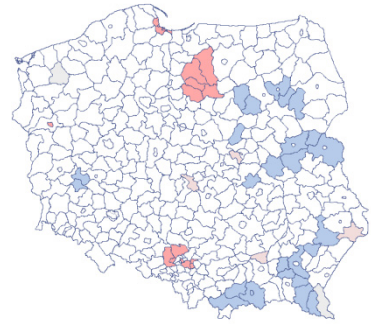
Source: own elaboration based on the results of "Social Diagnosis 2013"

1 A district belongs to one of the 4 spatial regimes when the differences between the value of the variable (here: satisfaction with life) on its territory in comparison with the average value of this variable from neighbouring districts must be significant at the chosen significance level (here: 0.05) (Suchecka, 2014).

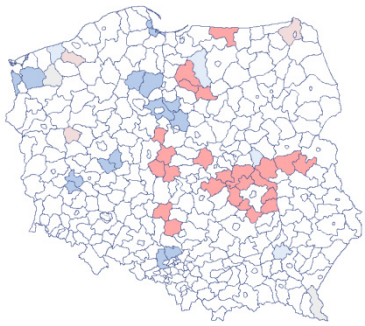
7. People try to help others above all



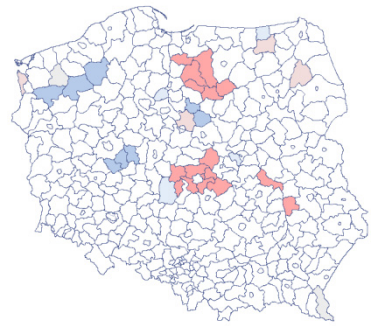
8. Homosexuals should be allowed to live according to their beliefs



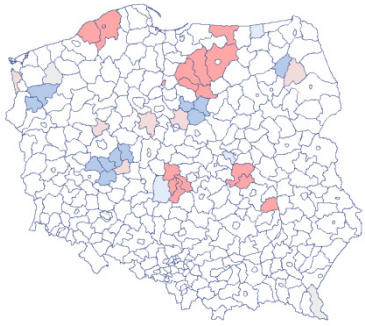
9. Foreigners have too much to say in our country



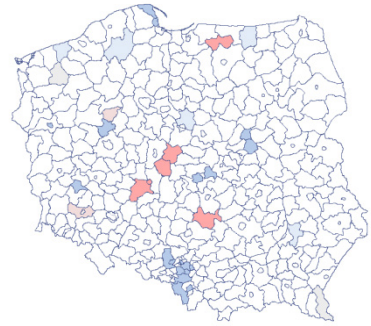
10. Some people are worth more than others



11. Some groups of persons are not worthy of respect



12. We should seek to make the income of all persons more or less equal



Legend for maps of spatial regimes:
districts with high intensity of phenomenon, surrounded by districts with high intensity of phenomenon,
districts with high intensity of phenomenon, surrounded by districts with low intensity of phenomenon,
districts with low intensity of phenomenon, surrounded by districts with low intensity of phenomenon,
districts with low intensity of phenomenon, surrounded by districts with high intensity of phenomenon.

Maps 7–12. Spatial regimes for the average level of acceptance of 6 analysed statements

Source: as in Map 1

In the next step, it was also checked in which areas on the map of Poland we can notice the so-called spatial regimes, i.e. clusters of districts that are characterised by a high level of acceptance of a given statement and are surrounded by districts with an equally high level of the studied phenomena (dark red colour) or have a high level of features and are surrounded by districts with a low attribute level (light red colour). Similarly, districts with a low level of the phenomena are distinguished and surrounded by areas with equally low (dark blue colour) or high (light blue colour) trait values. In the construction of those regimes, **Moran's local statistic** was used, assuming a significance level of 0.05.

What was already visible on Map 2 and 3 is confirmed by Maps 8 and 9 with spatial regimes. On Map 8, more blue clusters (districts with low attribute values) appear in the east of the country, while on Map 9 in the west.

Proceeding to the implementation of the second research goal, first it was checked whether there were statistically significant differences in the average level of agreement with the 6 examined statements in a cross-section of 8 distinguished features (sex, age, etc.). In order to determine whether such differences were statistically significant, the **t test** for the difference of two means was used, and the results of the calculations are presented in Table 2. It can be seen that sex, education level and employment status are factors for which there are statistically significant differences between the two categories of these characteristics for all the 6 analysed statements.

Table 3 is an extension of Table 2, as it shows in how many districts the difference between the average level of agreement with the examined statements is statistically significant (alpha = 0.05) and for which category of 8 factors the level of this agreement is higher.

The following two maps show, for example, what the distribution of differences in the average level of agreement with the analysed statements looks like (it was not possible to show all of them – 48 in total).

Table 2. The differences in the average level of agreement with the analysed statements between two variants of factors describing respondents

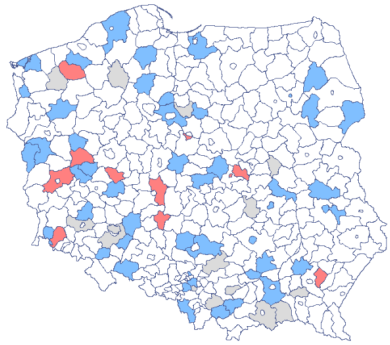
The criterion of division	People try to help others above all	Homosexuals should be allowed to live according to their beliefs	Foreigners have too much to say in our country	Some people are worth more than others	Some groups of persons are not worthy of respect	We should seek to make the income of all persons more or less equal
Sex (*comparison of males and females*)	**t = 4.80 (*p* = 0.0000)**	***t* = 16.26 (0.0000)**	***t* = –6.28 (*p* = 0.0000)**	***t* = –5.56 (*p* = 0.0000)**	***t* = –8.94 (p = 0.0000)**	***t* = 3.48 (*p* = 0.0005)**
Marital status (*singles vs married people*)	*t* = 0.49 (*p* = 0.6265)	*t* = 4.25 (*p* = 0.0000)	*t* = –1.65 (*p* = 0.0983)	*t* = –0.34 (*p* = 0.7343)	*t* = 4.23 (*p* = 0.0000)	*t* = 1.56 (*p* = 0.1198)
Education (*tertiary edu. vs without t.edu.*)	***t* = 7.34 (*p* = 0.0000)**	***t* = –23.79 (*p* = 0.0000)**	***t* = 17.86 (*p* = 0.0000)**	***t* = 5.93 (p = 0.0000)**	***t* = 14.26 (*p* = 0.0000)**	***t* = 33.41 (*p* = 0.0000)**
Employment status (*with and without work*)	***t* = 2.21 (*p* = 0.0270)**	***t* = –8.86 (*p* = 0.0000)**	***t* = 4.03 (*p* = 0.0001)**	***t* = 3.91 (*p* = 0.0001)**	***t* = 6.32 (*p* = 0.0000)**	***t* = 7.73 (*p* = 0.0000)**
Health (*healthy vs disabled*)	*t* = 0.01 (*p* = 0.9954)	***t* = –4.93 (*p* = 0.0000)**	***t* = 2.57 (*p* = 0.0101)**	*t* = 1.36 (*p* = 0.1741)	*t* = 1.47 (*p* = 0.1425)	**t = 4.15 (*p* = 0.0000)**
Participating in church services (*yes vs no*)	***t* = –14.24 (*p* = 0.0000)**	***t* = 17.77 (*p* = 0.0000)**	***t* = –9.85 (*p* = 0.0000)**	*t* = 0.18 (*p* = 0.8547)	***t* = 2.98 (*p* = 0.0029)**	***t* = –9.77 (*p* = 0.0000)**
Age (*under 40 vs 40+*)	*t* = 0.65 (p = 0.5125)	***t* = 9.44 (*p* = 0.0000)**	**t = –3.52 (*p* = 0.0004)**	***t* = –7.9 (*p* = 0.0000)**	***t* = –2.72 (*p* = 0.0065)**	*t* = 1.12 (*p* = 0.2630)
Income (*over 1500PLN vs not more than 1500PLN*)	***t* = 2.76 (*p* = 0.0059)**	***t* = –11.18 (*p* = 0.0000)**	***t* = 10.35 (*p* = 0.0000)**	*t* = 0.67 (*p* = 0.5008)	***t* = 4.68 (*p* = 0.0000)**	***t* = 26.2 (*p* = 0.0000)**

Source: as in Table 1

Table 3. Number of districts with a significant (0.05) difference between the average level of agreement with the analysed statements for two different factor categories

Variants of the studied factors	People try to help others above all	Homosexuals should be allowed to live according to their beliefs	Foreigners have too much to say in our country	Some people are worth more than others	Some groups of persons are not worthy of respect	We should seek to make the income of all persons more or less equal
A – higher level of agreement for women	16	32	27	15	31	15
B – higher level of agreement for men	13	1	10	11	10	3
A – higher level of agreement for singles	11	30	10	19	17	16
B – higher level of agreement for married people	13	10	15	12	10	18
A – higher level of agreement for people without tertiary education	17	1	34	18	35	101
B – higher level of agreement for people with tertiary education	5	53	9	8	1	4
A – higher level of agreement for the unemployed and professionally inactive	14	4	22	19	25	33
B – higher level of agreement for employees	6	23	10	13	11	7
A – higher level of agreement for disabled people	17	6	13	16	16	10
B – higher level of agreement for healthy people	16	16	7	9	12	15
A – higher level of agreement for people not participating in church services	7	50	16	19	28	19
B – higher level of agreement for people participating in church services	45	10	24	15	11	39
A – higher level of agreement for "young" people (aged under 40)	21	45	11	12	14	18
B – higher level of agreement for "old" people (aged 40+)	18	8	19	37	20	11
A – higher level of agreement for high income people	16	32	27	15	31	15
B – higher level of agreement for low income people	13	1	10	11	10	3

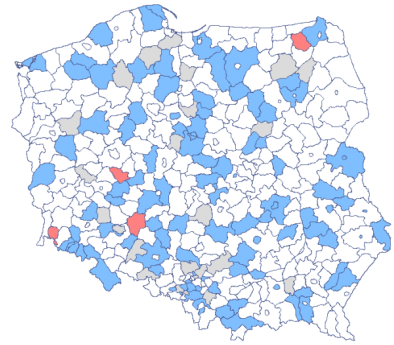
Source: as in Table 1



Districts with a greater level of agreement with this statement among people participating in church services were marked in red.

Map 13. Districts in which there are significant differences in the level of agreement with statement no. 2 (about homosexuals)

Source: as in Map 1



Districts with a greater level of agreement with this statement among people with higher education level were marked in red.

Map 14. Districts in which there are significant differences in the level of agreement with statement no. 6 (about equal incomes)

Source: as in Map 1

In the last stage of the research, the third goal was undertaken, so an attempt was made to construct **statistical models** describing the average level of agreement with the analysed statements based on several factors (mentioned in the Introduction) describing **districts** this time. Three types of models (classical regression model, spatial autoregression model called Spatial Lag Model <SLM> and a model of spatial autocorrelation of the random component called Spatial Error Model <SEM>) (Anselin, 2006) were compared with one other. While the classical model does not require much explanation, the second model takes the following form (Suchecki, 2010):

$$y = \rho Wy + \beta X + \varepsilon,$$

where:
y – dependent variable (here: life satisfaction),
ρ – spatial autocorrelation coefficient,
W – matrix of spatial wages,
β – vector of coefficients,
X – matrix of independent variables,
ε – model error.

The above-presented model is a response to a negative impact of spatial interactions on the assessment of structural parameters of classical LSM models, while the next model takes into account the spatial dependence regarding random error (Suchecki, 2010):

$$y = \beta X + \xi,$$

$$\text{where } \xi = \lambda W\xi + \varepsilon,$$

where:
λ – spatial autocorrelation coefficient,
ξ – independent error of model,
ε – spatially lagged model error.

The coefficient λ is a measure of the strength of mutual correlations of residues from the classical LSM model and, based on this parameter, it can be concluded that there are significant factors affecting the variability of the dependent variable which have not been included in the regression model (non-measurable, accidental, etc.) (Kossowski, 2010). A spatially delayed model error is a function of spatially lagged random error (residuals from regression from neighbouring locations) and a "purified" random component (fulfilling the assumptions of classical LSM) (Suchecki, 2010).

In both spatial regression models, there was used a spatial weights matrix (W) taking into account the immediate vicinity called "Queen method", so districts are considered as neighbours if they share at least a vertex of the polygon which represents their territory (Getis, 2004).

Based on Table 4, which presents all the 15 models (there should be 18, but in 3 cases there were no statistically significant<alpha=0.10>variables), it can be concluded that it is difficult to speak about clear spatial regularities in the distribution of the level of agreement with the 6 examined statements associated with social relations. The quality of fit ratios (R^2, log-likelihood and Akaike criterion) is unsatisfactory to prove that in Poland the degree of agreement with the analysed statements is determined by the 8 chosen factors (the percentage of women, the percentage of people with tertiary education, etc.) and at the same time spatially. In a similar study for variables related not to social attitudes but to satisfaction with various spheres of life (Szubert, 2016), the quality of fit was much better, but only a little. It can therefore be said that various aspects of the human psyche (whether expressed by attitudes or satisfaction) are not so spatially conditioned.

Nevertheless, it can be inferred from the estimated parameters whether a given factor (i.e. the percentage of women in a given district) significantly influences the average level of agreement with a given statement about social relations, how much this level is changing and what is the direction of this change. Especially two factors have proven to have a significant impact on the territorial differentiation of Poles' attitudes towards social relations: the income level and the level of education.

Table 4. The parameters of models describing the average level of agreement with the analysed statements in Polish districts

OLS model			SLM model			SEM model		
Variable	Parameter	*p*-value	**Variable**	Parameter	*p*-value	**Variable**	Parameter	*p*-value
People try to help others above all								
CONSTANT	4.0971	0.0000	**Wy**	0.0634	0.1986	**CONSTANT**	3.7612	0.0000
EDUCAT	–0.0067	0.0014	**CONSTANT**	3.5256	0.0000	**SEX**	0.0061	0.0752
			SEX	0.0057	0.0925	**EDUCAT**	–0.0069	0.0010
			EDUCAT	–0.0067	0.0014	**Lambda**	0.1735	0.0174
R-squared =	0.0270		**R-squared =**	0.0386		**R-squared =**	0.0536	
Log likelihood =	–230.12		**Log likelihood =**	–228.01		**Log likelihood =**	–225.97	
Akaike info crit. =	464.24		**Akaike info crit. =**	464.01		**Akaike info crit. =**	457.94	
Homosexuals should be allowed to live according to their beliefs								
CONSTANT	4.2091	0.0000	**Wy**	0.1465	0.0034	**CONSTANT**	4.2123	0.0000
CHURCH	–0.0074	0.0000	**CONSTANT**	3.6061	0.0000	**EDUCAT**	0.0075	0.0143
INCOMES	0.0010	0.0000	**EDUCAT**	0.0063	0.0384	**CHURCH**	–0.0067	0.0002
			CHURCH	–0.0069	0.0000	**INCOMES**	0.0060	0.0111
			INCOMES	0.0069	0.0017	**Lambda**	0.3123	0.0000
R-squared =	0.1449		**R-squared =**	0.1719		**R-squared =**	0.2062	
Log likelihood =	–290.23		**Log likelihood =**	–284.94		**Log likelihood =**	–279.82	
Akaike info crit. =	586.45		**Akaike info crit. =**	579.89		**Akaike info crit. =**	567.64	
Foreigners have too much to say in our country								
CONSTANT	4.1374	0.0000	**Wy**	0.1833	0.0006	**CONSTANT**	4.5767	0.0000
WORK	0.0053	0.0795	**CONSTANT**	3.7715	0.0000	**CHURCH**	0.0046	0.0168
CHURCH	0.0053	0.0042	**CHURCH**	0.0045	0.0133	**AGE**	–0.0010	0.0022
AGE	–0.0066	0.0623	**AGE**	–0.0087	0.0082	**INCOMES**	–0.0057	0.0061
INCOMES	–0.0074	0.0003	**INCOMES**	–0.0055	0.0041	**Lambda**	0.3016	0.0000
R-squared =	0.0928		**R-squared =**	0.1196		**R-squared =**	0.1431	
Log likelihood =	–314.57		**Log likelihood =**	–310.14		**Log likelihood =**	–307.18	
Akaike info crit. =	639.14		**Akaike info crit. =**	630.28		**Akaike info crit. =**	622.36	
Some people are worth more than others								
NO SIGNIFICANT VARIABLES			NO SIGNIFICANT VARIABLES			NO SIGNIFICANT VARIABLES		
Some groups of persons are not worthy of respect								
CONSTANT	4.6080	0.0000	**Wy**	0.1821	0.0007	**CONSTANT**	4.6366	0.0000
MARIT. ST.	–0.0061	0.0466	**CONSTANT**	3.8461	0.0000	**MARIT. ST.**	–0.0066	0.0258
			MARIT. ST.	–0.0060	0.0445	**Lambda**	0.2865	0.0000
R-squared =	0.0105		**R-squared =**	0.0457		**R-squared =**	0.0654	
Log likelihood =	–331.93		**Log likelihood =**	–326.29		**Log likelihood =**	–324.19	
Akaike info crit. =	667.85		**Akaike info crit. =**	658.59		**Akaike info crit. =**	652.38	
We should seek to make the income of all persons more or less equal								
CONSTANT	5.2228	0.0000	**Wy**	0.0951	0.0421	**CONSTANT**	5.1037	0.0000
EDUCAT	–0.0131	0.0001	**CONSTANT**	4.6728	0.0000	**EDUCAT**	–0.0131	0.0001
HEALTH	0.0072	0.0295	**EDUCAT**	–0.0128	0.0001	**HEALTH**	0.0083	0.0127
INCOMES	–0.0102	0.0000	**HEALTH**	0.0075	0.0217	**INCOMES**	–0.0096	0.0001
			INCOMES	–0.0095	0.0000	**Lambda**	0.1833	0.0117
R-squared =	0.1970		**R-squared =**	0.2145		**R-squared =**	0.2131	
Log likelihood =	–310.17		**Log likelihood =**	–306.33		**Log likelihood =**	–307.56	
Akaike info crit. =	628.34		**Akaike info crit. =**	632.66		**Akaike info crit. =**	623.12	

Source: as in Table 1

3. Conclusions

Summing up the presented research results, it should be emphasised that the distribution of Poles' responses to the 6 analysed statements about various social attitudes is quite diverse (Figure 1), and the highest degree of agreement with these statements concerns "seeking to make the income of all persons more or less equal" (Figure 2). Despite such differentiation, it turns out, however, that the distributions of the average level of agreement with the examined statements are not random in spatial terms (by districts), as shown on Maps 1–6 and in Table 1. What is clear, and also noted in many other social analyses, is that the division into the east and west of Poland is still evident. The main reason for such differences in the distribution of Poles' attitudes is economic and ideological conditioning.

The attitudes examined in the article are also an expression of the quality of social capital, and its most important component is trust in other people (Dzwończyk, 2009). Poles are not a nation that especially trusts others. According to the ESS (www.europeansocialsurvey.org), we are far from the Scandinavian and Western countries. The level of trust is, in turn, strongly associated with wealth indicators – in many studies (i.e. Uslaner, Dekker, 2001), there are even very strong correlations between these variables. Being a nation poorer than the West of Europe, we have lower rates of social trust, but this regularity is evident even within the territory of Poland (the richer west with a higher level of social capital versus the poorer east of the country with a lower trust level).

However, trying to take into account income as a key factor for differentiation of attitudes (as well as other demographic, social and economic characteristics), it was not possible to build satisfactory (from the point of view of quality of fit) spatial regression models that would explain why in some districts the acceptance degree of a given statement is higher and somewhere else lower (Table 4), but most often income was a factor statistically significantly differentiating those attitudes. The unsatisfactory degree of fit of the models can be explained as the effect of influencing our opinions and social attitudes by a wide range of factors (not only those included in the study), sometimes difficult to quantify (political views, etc.). Social researchers (i.e. Sztompka, 2007) most often mention three such difficult to measure factors: historical heritage (which leads to optimism, hope and trust, or on the contrary – imposes pessimism, suspicion and distrust towards strangers), current structural conditions and personal conditions (certain personality traits, aspirations of individuals, general attitudes, etc.). In the case of Poland, most of these factors have a negative impact on shaping public trust.

In addition, as A. de Tocqueville (1999) noted, trust considered at the level of relationships between people is a derivative of trust in politicians and state institutions, and also in terms of this issue Polish society is permeated by a climate of distrust and is very different from most Western European countries.

As the results of the study show, the acceptance attitudes (or not) for homosexual unions are also territorially different. As Górska and Mikołajczak (2014) or Czerniawska (2015) claim, the highest level of traditional homophobia is declared by rural residents, poorly educated, older and very religious, while young educated inhabitants of big cities are much less likely to display such prejudices. In the presented study, an important factor for this second type of attitudes was also income (Table 4), and the west of the country again turned out to be more tolerant.

Another attitude for which the division was revealed due to the place of residence is fear of strangers (people of other nationalities). In the Polish national-right discourse, such aversion to strangers is often received positively (Brzozowska, 2009; Ruszkowski, 2017), while the cradle of such attitudes is usually the east of the country, which was confirmed in the presented maps.

Summarising, trust, tolerance and openness to others are such valuable social resources that every effort should be made to disseminate them in society, as the social capital built in this way, accompanied by high tolerance and openness, contributes to the emergence of a positive state of civic community (Krauz-Mozer, Borowiec, 2007).

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Czynniki różnicujące postawy Polaków wobec relacji społecznych – ujęcie przestrzenne

Streszczenie: W badaniu zajęto się tematem postaw Polaków wobec wybranych aspektów związanych z relacjami społecznymi. Badano ustosunkowanie się do sześciu stwierdzeń: 1 – „Ludzie przede wszystkim starają się służyć pomocą innym", 2 – „Homoseksualiści powinni móc układać sobie życie według własnych przekonań", 3 – „Zbyt wiele mają do powiedzenia w naszym kraju osoby obcego pochodzenia", 4 – „Niektórzy ludzie są więcej warci od innych", 5 – „Niektóre grupy ludzi nie zasługują na szacunek", 6 – „Powinniśmy dążyć do tego, aby dochody wszystkich ludzi były w miarę wyrównane". Pierwszym celem opracowania było sprawdzenie, jak rozkłada się poziom zgadzania się z tymi stwierdzeniami przestrzennie, w ujęciu powiatów. Kolejno zbadano, czy postawy te są zróżnicowane w podziale na osiem cech opisujących Polaków: płeć, stan cywilny, poziom wykształcenia, stan zdrowia, uczestnictwo w nabożeństwach, wiek oraz poziom dochodów, również uwzględniając aspekt przestrzenny. Na koniec analizy skonstruowano modele regresji (klasyczne i przestrzenne), aby sprawdzić, czy na podstawie kilku cech opisujących tym razem powiaty (a nie pojedynczych respondentów) uda się stworzyć model wyjaśniający, dlaczego w niektórych regionach ludność zgadza się z danymi stwierdzeniami bardziej, a w innych mniej. Dane potrzebne do analiz zaczerpnięto z ogólnopolskiego badania pt. „Diagnoza społeczna", a wszystkie obliczenia wykonywano w programach PQStat oraz Geoda.

Słowa kluczowe: statystyka przestrzenna, postawy społeczne

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