

Urban development and interethnic intolerance: Evidence from Russia

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Abstract

This work is devoted to the study of the impact of urban development on interethnic intolerance. Although studies on the impact of urbanization and the economic well-being of cities on interethnic intolerance have been conducted in other countries, no similar scientific work has been conducted in Russia. The purpose of this paper is to determine factors related to urban development that influence the level of interethnic intolerance in a Russian city and to clarify the nature of this influence. The assumption of the presence of such an influence is based on the fact that the comfort of the urban environment can play the role of an indicator of economic well-being, while the exacerbation of social conflicts during periods of economic instability is scientifically substantiated. This influence is studied using an econometric study on a sample of 66 Russian cities with a population of over 100 thousand people, where 2 or more crimes motivated by interethnic intolerance were committed during the period 2007–2019. The information base for the study was obtained from the website of the SOVA Center for Information and Analysis, the statistical databases of Rosstat and EMISS, and the official website of the urban environment quality index. Based on the results obtained, it is concluded that interethnic intolerance is reduced due to a comfortable urban environment. Also, according to the study, in more populated Russian cities the level of interethnic intolerance is higher, whereas the incomes of city residents reduce it.

Keywords: urban development, interethnic intolerance, interethnic crime, tolerance, migration, Russian cities.

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Introduction

Currently, one of the popular topics in economic research is the study of differences between social groups and their impact on the economic development. One of the main directions is the study of ethnic inequality, the manifestations of which may be associated with economic activity and the development of territories where certain groups live.

The issues of interethnic tensions in modern cities are becoming more and more acute. In the era of mass migration to big cities, there are a huge number of ethnic groups that constantly interact with each other. Thus, according to the Russian authorities, there are more than 10 million foreign citizens on the territory of the Russian Federation, the overwhelming majority of whom are citizens of Ukraine, Uzbekistan, Tajikistan, Azerbaijan, Kyrgyzstan, Armenia, and Moldova of working age. Although our society is developing very rapidly technologically, the same does not apply to the transformation of values — many prejudices, including xenophobic ones, are still strong.

The problem of the influence of the urban environment on interethnic intolerance is extremely poorly studied. Although studies on the impact of urbanization and the economic well-being of cities on interethnic intolerance have been conducted in other countries, no similar scientific work has been conducted in Russia. This work is the first research among Russian and foreign works that raises the question of the influence of the comfort of the urban environment on interethnic intolerance, and its practical novelty lies in conducting a study of the influence of various factors on xenophobia based on Russian data. The purpose of this paper is to determine factors related to urban development that affect the level of interethnic intolerance in a Russian city and to clarify the nature of this influence.

1. Literature review

Despite the lack of scientific clarity on the impact of urban development on ethnic intolerance, there are many studies on related topics that provide insight into the possible relationship between these indicators. One of the areas of research is the relationship between ethnic diversity and economic performance.

The connection between ethnic diversity and the economy has been extensively studied since the 2000s. One of the broadest studies is the research by Alesina and Ferrara (2005), which examined the impact of ethnic diversity in the United States on economic performance and the reasons for this impact. According to the results of testing the model (Alesina et al., 1999) which links the heterogeneity of preferences among different ethnic groups in the city with the amount and types of provided urban public goods spending on public goods (education, waste collection, road system) in the city is negatively connected with ethnic fragmentation, which makes it possible to analyze the significance of the impact of ethnic conflicts on local financing of public goods.

In another study by Ager and Brueckner (2018), given the influence of factors such as the rate of urbanization, incomes, and production growth, scientists concluded that

ethnic diversity and economic prosperity of the US counties in the period 1870–1920, which in the study was measured by the volume of production per capita, had a positive correlation. Another study by Alesina et al. (2016), which examined the relationship between intrapopulation diversity of birthplaces and economic prosperity, concluded that the diversity of immigrants relative to birthplace had a positive effect on economic prosperity, as indicated in the study by income per capita. Other scientists have come to the opposite results (Algan et al., 2016), having established the negative impact of ethnic diversity on the quality of housing in France.

At the same time, there is some evidence that ethnic diversity may have a negative impact. For example, research by Miguel and Gugerty (2005), based on data on ethnic diversity and public goods in rural areas of western Kenya, demonstrate that ethnic diversity has a negative impact on the state of public goods. The researchers explain this by the fact that the difficulty of imposing sanctions on ethnically diverse communities leads to unsuccessful collective actions, deteriorating opportunities for cooperation.

A study on the existence of discrimination in the rental market in France (Acolin et al., 2016), concerning applicants whose names indicate their connection with five different groups of immigrants, shows that geographical differences correlate with various indicators regarding local incomes of the population and the share of immigrants in the population. According to the study, discrimination against ethnic minorities is more pronounced in places with a large number of immigrants. In addition, discrimination against immigrants whose names are particularly susceptible to it is lower in areas, where the income of immigrants is higher relative to the income of indigenous people, as well as in places with high employment rates relative to the local population.

Ethnic diversity can have different impacts in different periods. According to Putnam (2007), although ethnic diversity has a negative impact over a short time, reducing trust in society and hindering the development of social capital, over a longer period, ethnic diversity has a positive effect on economic and cultural performance. This is because in the long run, new forms of social solidarity are being created in an ethnically diverse society, so the negative consequences of diversity are smoothed out.

The results at the micro level are also mixed. According to a study by Hjort (2014), based on data from a factory in Kenya, ethnic diversity negatively affected productivity in the private sector. In a study of more than 2,000 UK SMEs (Lee, 2015), Lee concludes that cultural diversity has a positive effect on the innovativeness of firms — companies with a large number of foreign-born owners or partners produce more innovation.

In another study based on the exogenous source of differences in population diversity between different ethnic groups, Arbatli and his colleagues (2020) conclude that it was the interpersonal population diversity, and not fractionalization or polarization between ethnic groups, that played a significant role in the occurrence, intensity, and likelihood of civil conflicts within various societies. In a study of the relationship between ethnic

fractionalization, polarization, and civil conflict, Montalvo and Reynal-Querol (2005) found that ethnic factionalism did not have a significant impact on the likelihood of civil wars in society, therefore, it probably could not exert an impact on economic performance. Nevertheless, based on cross-country data for 1960–1999, the researchers concluded that the index of ethnic polarization, on the contrary, was a significant factor affecting the frequency of civil conflicts.

Unemployment may be one of the reasons for the emerging interethnic intolerance — according to popular opinion, providing jobs to immigrants increases unemployment among the local population. Consequently, city dwellers can blame newcomers for the lack of jobs, which can increase interethnic intolerance. Based on data on 380 local US labor markets for 1995–2010, the results of the study show that, given the annual unemployment rate, the educational level of immigrants and the local population over the past decade and the annual level of anti-immigrant sentiment, attitudes towards immigrants are more negative in those places where the unemployment rate is higher (De Jong et al., 2017). It is worth noting that the identified impact is evident only for those places that have recently become the destination of immigrants. The skill level of migrants has a positive effect on attitudes towards them, but, according to scientists, the skill level of residents, which also has a positive effect on the perception of newcomers, is a more appropriate explanation.

However, studies of the impact of migration on unemployment indicate zero or little impact (Card, 2001). Based on data from 170 largest cities in the United States, the scientist concludes that the impact of immigrant flows on lower wages and employment rates of low-skilled workers in cities that traditionally have a relatively large share of low-skilled workers is about 1–3%. In a study of 120 US cities on the impact of immigration on the labor market for low-skilled workers (Altonji & Card, 1991), the researchers conclude that the increase in the flow of immigrants did not create a significant increase in competition for a job. At the same time, the scientists note that an increase in the flow of immigrants has a negative impact on the wages of low-skilled local workers, and the value of this indicator differs for different groups of the population and depends on the conditions of the local labor market. According to a study (Peri, 2012) based on the census years for 50 US states from 1960 to 2000 and 2006, immigration flows do not have a significant impact on employment.

It is important to remember that economic well-being itself can influence interethnic tensions. A study by Crepez et al. (2009), based on data from 17 different countries, shows a positive effect of the level of decommodification (the strength of social benefits and the independence of citizens from market fluctuations) on the tolerance of indigenous people towards immigrants. Analyzing the causes, consequences, and types of xenophobia in South Africa (Lukong, 2011), Lukong finds that the reasons for the negative attitude towards migrants from other countries proceed from the fact that they create additional demand for limited resources and public goods (education, health care, housing, infrastructure). In addition, migrants are willing to work for smaller wages, which, against the background of high unemployment and layoffs, creates additional difficulties for the local population.

In its fact sheet on the impact of the economic crisis on discrimination and xenophobia (2009), UNESCO notes the following trend: for fear of increased competition for jobs with migrants, the local population forced some trade unions to require restricted entry for foreign workers. Research by the International Labor Organization (UN specialized agency) (2004) reveals that the percentage of respondents supporting discrimination in employment against minorities and migrants varies from 5% in Hungary to 65% in Russia. Moreover, data from the Russian Federation show that those who are dissatisfied with their incomes are more prone to discrimination.

In addition to the above, it is worth highlighting such a factor influencing interethnic intolerance as the level of education. In a study examining the factors of Japanese acceptance of foreigners (Nukaga, 2006), the author concludes that education has a significant impact in reducing xenophobia. The results show that age and the likelihood of an economic threat increase ethnic intolerance. In a study by Wodtke (2012), based on data from surveys conducted in the United States on the topic of racial discrimination, the researcher analyzes the impact of education on racial stereotypes and attitudes towards racial discrimination among whites, blacks, Asians, and Hispanics and concludes that a higher level of education reduces xenophobia. At the same time, respondents from Asia are an exception — many Asians, regardless of the level of education received, have a negative perception of blacks and Hispanics. The scientist notes that the results are consistent with the idea that education promotes the legitimization of the ideology of the dominant group among non-white minorities, and not evenly, but depending on their position in the racial hierarchy.

The results are validated at the cross-country level. A study by Hjerm (2001), based on data from 10 countries with different immigration policies and conditions for obtaining citizenship, concludes that with an increase in the level of education, the levels of xenophobia and nationalist sentiments, which were determined in the study with the help of information obtained from an international sociological survey conducted in 1995, are decreasing. This trend is observed for all countries in the sample, despite significant differences between their education systems.

Although cross-country studies often show negative or statistically insignificant relationships between ethnic diversity and economic well-being, analysis at the city level shows a positive impact of diversity on economic performance. For example, a study based on data on African cities (Montalvo & Reynal-Querol, 2021) reveals the positive impact of diversity on wages and productivity. Scientists find that the impact of ethnic diversity on economic growth is positive in the case of small geographic areas. Investigating how increased cultural diversity affects wages and rental prices in American cities, Ottaviano and Peri come to similar conclusions (2006).

The level of urban development, according to studies, can influence tolerance and, in particular, interethnic tensions and xenophobia. Huggins and Debies-Carl (2014) conclude that urban development has a positive effect on tolerance. In a research conducted on data from 29 countries, they study city and country factors influencing it. The following factors are used: size of the city, type of employment, income, education level, population density, religion, ethnic and linguistic fragmentation, age, sex, GDP.

Scientists conclude that the nature of the urban environment, determined in the study through the size of the city, has a uniquely positive effect on the residents' tolerance, regardless of which group tolerance is tested for. In a study by Tuch (1987), examining the influence of the diversity and heterogeneity of urban life on racial prejudice, the author comes to the conclusion about the importance of the influence of the urban environment on racial intolerance. He defines the urban environment through the size of the settlement, referring places with a population exceeding 50,000 people to urban. Another study with a similar methodology for determining urbanized areas (Wilson, 1985), where tolerance is determined through the willingness of respondents to provide civil liberties to various social groups, concludes that the urban environment has a positive effect on tolerance. However, one of the fundamental studies on the influence the urban indicators on tolerance (Fischer, 1971) raises doubts about the influence of the city size and the urbanization level on the residents' tolerance. At the same time, there are other results: tolerance increases with an increase in socioeconomic status and depends on geographic location and religion. It is also worth noting that the size of the city has different meanings as a factor of tolerance towards different social groups. Moreover, the size of the city is not the only dimension of urban development, as bigger cities may have worse living conditions, so the linkage between urban development and tolerance is still questionable.

Thus, the literature review shows that ethnic diversity has a mixed effect on the economy and the level of intolerance. Moreover, the source of intolerance may be related to economic factors — the situation in the labor market may be understood as a result of migration processes. However, we still do not know how much the comfort of the urban environment (which also affects a person's perceived well-being) is related to the level of intolerance. It is this question that we are trying to answer in this article.

Based on this, we put forward the following hypothesis:

H1: The comfort of the urban environment of a Russian city negatively affects the level of ethnic intolerance in the city.

In addition, it is worth looking at how much the size of the city itself is related to the level of tolerance or if this indicator is just a proxy for assessing the quality of the urban environment. Therefore, we put forward the following hypothesis based on past research:

H2: The size of a Russian city negatively affects the level of ethnic intolerance in the city, regardless of the quality of the urban environment.

Another interesting question is to what extent the economic well-being of the city can be associated with the level of ethnic intolerance. Therefore, we put forward the following hypothesis:

H3: The average income of residents negatively affects the level of ethnic intolerance in a Russian city.

These hypotheses are tested on data from Russia — a country whose cities differ significantly in the quality of the urban environment and in which detailed statistics of crimes related to interethnic intolerance are maintained.

2. Interethnic intolerance in Russia: Existing data and previous research

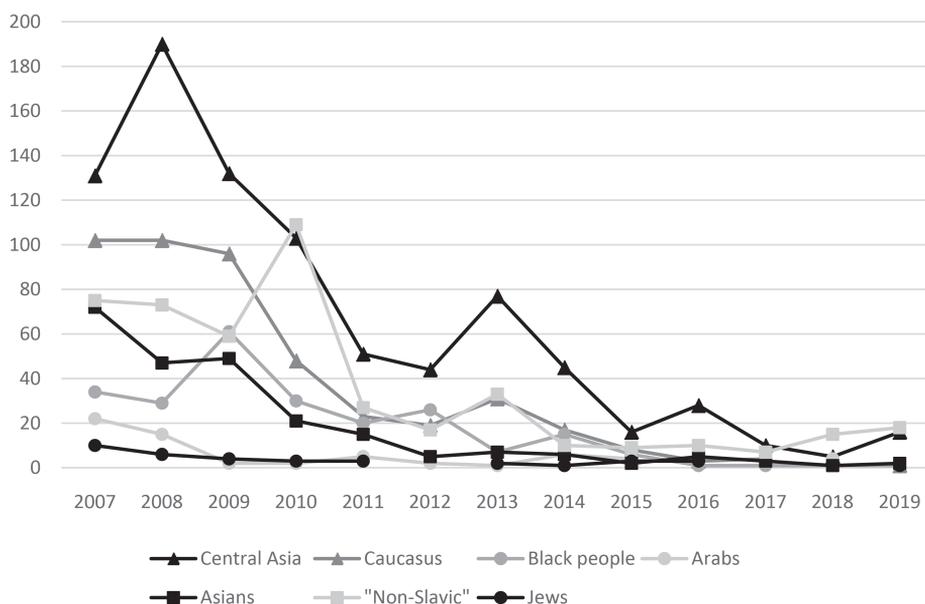
The processes of transformation of Russian society during and after the collapse of the Soviet Union led to an increase in interethnic tensions in all ex-Soviet republics, including Russia. Despite the “friendship of peoples” discourse promoted by the communist government, in the 1990s, sociologists recorded an increase in xenophobia and hostility to representatives of other nationalities (especially labor migrants) among former representatives of the “Soviet people” (Achkasov, 2008). Both migrants and representatives of ethnic minorities in regions with the predominance of Russians, as well as Russians themselves in regions where they are a minority, faced xenophobia and discrimination in the 1990s and 2000s (Drobizheva, 2005).

The high level of ethnic intolerance in Russian society is also expressed by the large number of crimes connected to interethnic and interfaith intolerance. Thus, according to the SOVA Center for Information and Analysis, which studies interethnic relations in Russia, 2,330 crimes of this type were committed from 2007 to 2019.¹ Figure 1 shows a crime map for this period. Victims of crimes caused by interethnic intolerance included the following categories: people from Central Asia, black people, people from other Asian countries, Jews, people from the Caucasus, people of “non-Slavic appearance,” people from the Middle East and North Africa. Beatings, injuries, death threats/reprisals are marked in red and murders are marked in black.



As it can be seen on the map, most of the crimes occurred in places located in close proximity to the national borders and in Central Russia. A relatively large part of immigrants from other countries and the North Caucasus traditionally live in these places on a permanent or temporary basis.

The distribution of crimes by year is shown in Figure 2. It can be noted that over time there has been a significant decrease in the number of xenophobic crimes. This is due, firstly, to a decrease in the overall crime rate in Russia (as in other countries, there is a steady decrease in the number of violent crimes regardless of their motivation), and secondly, to a decrease in the level of xenophobia, which has been recorded by the Levada Center since 2014.²

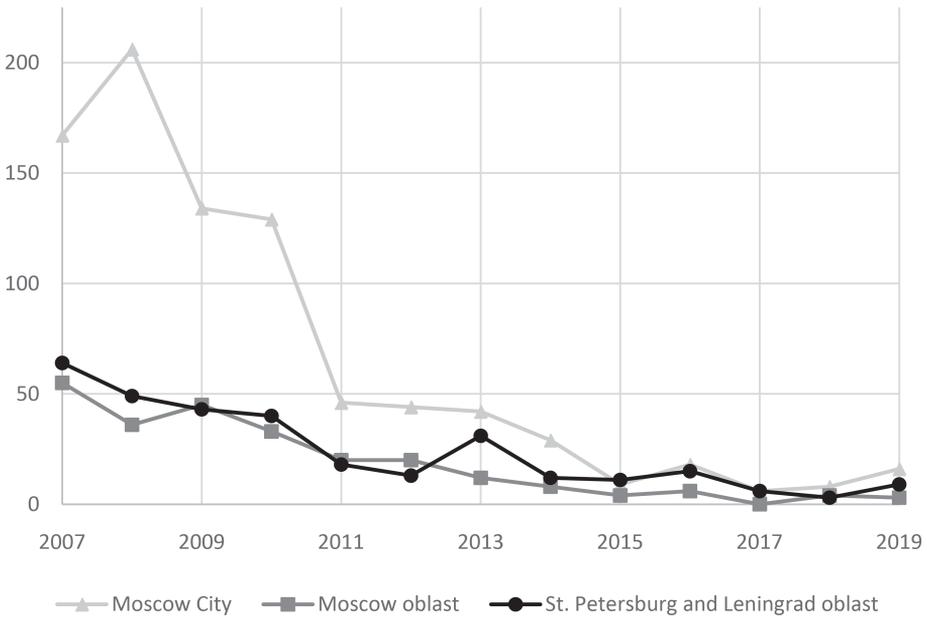


Source: calculated by the authors based on the data of the SOVA Center for Information and Analysis.

Figure 2. Dynamics of crimes motivated by interethnic intolerance by year

The most vulnerable group are people from Central Asia, the Caucasus, and other people of “non-Slavic” appearance. The smallest number of crimes due to interethnic intolerance were committed against Jews (which can be explained by the fact that a significant number of Jews historically live on the territory of Russia) and Arabs (which is rather explained by their small number since Russia is not a popular country for migration from the Arab world). If we study the dynamics based on regional indicators, we can see that a significant part of crimes occur in Moscow, St. Petersburg, and their surroundings. In this regard, they are presented separately in Figure 3.

² <https://www.levada.ru/2019/09/18/monitoring-ksenofobskih-nastroenij-2/>



Source: calculated by the authors based on the data of the SOVA Center for Information and Analysis.

Figure 3. The dynamics of crimes motivated by interethnic intolerance by year in Moscow, the Moscow Region, St. Petersburg and the Leningrad Region

Speaking about the quantitative analysis of xenophobia in Russia, it should be admitted that the number of studies conducted on that topic is quite small. The first large-scale experiment on interethnic intolerance in Russia was conducted relatively recently (Bessudnov & Shcherbak, 2019). The researchers sent more than 9,000 employment applications from representatives of 10 ethnic groups of different genders and professions. The study involved 4 Russian cities — Moscow, St. Petersburg, Ufa, and Kazan. The choice was dictated by differences in ethnic structure: in Moscow and St. Petersburg, the percentage of the Russian population is significantly higher than in Kazan and Ufa. According to the results of the experiment, there was no significant statistical difference between Russian, Jewish, and Ukrainian applicants. At the same time, applicants from European countries received approximately 5% fewer responses, from Central Asia — 12% less, and applicants from the Transcaucasian countries — 15% less. However, gender can play a significant role, especially for applicants from West and Central Asia.

Earlier, in a study on xenophobia in Russia (Alekseev, 2013), three main conclusions were made. First, ethnic minorities are less hostile towards migrants than the ethnic majority. Second, whether an ethnic group has a historical relationship to the locality since the Soviet period plays a more significant role than religion or ethnicity. That is, “historical” ethnic groups have more explicit anti-migrant views. Third, tolerance and intolerance are asymmetric. So, intolerance towards migrants tends to be more pronounced.

Speaking about the factors that affect the level of xenophobia in Russia, the following can be noted:

- The spread of social networks: the higher the proportion of citizens using social networks in regions with historically observed resentment towards representatives of other nationalities, the higher the number of inter-ethnic crimes committed (Bursztyn et al., 2019).
- Natives of Moscow, as well as the unemployed, demonstrate more xenophobic views than average Russians, while there are no differences between citizens with different income levels (Hannah et al., 2018).

At the same time, these works note that there are significant differences in the level of interethnic intolerance between the regions, which were observed even before the advent of social networks and are not related to unemployment. In the empirical part of the work, we check how these differences are related to the quality of life in the city.

3. Model and data description

The following models are used to test the hypotheses:

$$\begin{aligned}
 \text{Interethnic_Crimes}_i = & \beta_0 + \beta_1 * \text{urban_environment}_i + \\
 & + \beta_2 * \text{size_of_town}_i + \beta_3 * \text{aggregate_income}_i + \beta_4 * \text{unemployment}_i + \\
 & + \beta_5 * \text{density}_i + \beta_6 * \text{share_of_minorities}_i + \beta_7 * \text{education}_i + \\
 & + \beta_8 * \text{age_structure}_i + \beta_9 * \text{national_republic}_i + \beta_{10} * \text{close_to_Moscow}_i + \\
 & + \beta_{11} * \text{criminality}_i + \beta_{12} * \text{migration}_i + \beta_{13} * \text{media}_i + \beta_{14} * \text{distance}_i + \\
 & + \beta_{15} * \text{poverty_line}_i.
 \end{aligned} \tag{1}$$

$$\begin{aligned}
 \text{Interethnic_Crimes}_i = & \beta_0 + \beta_1 * \text{housing}_i + \beta_2 * \text{streets}_i + \beta_3 * \text{green_spaces}_i + \\
 & + \beta_4 * \text{public_and_business}_i + \beta_5 * \text{social_and_leisure}_i + \beta_6 * \text{citywide}_i + \\
 & + \beta_7 * \text{size_of_town}_i + \beta_8 * \text{aggregate_income}_i + \beta_9 * \text{unemployment}_i + \\
 & + \beta_{10} * \text{density}_i + \beta_{11} * \text{share_of_minorities}_i + \beta_{12} * \text{education}_i + \\
 & + \beta_{13} * \text{age_structure}_i + \beta_{14} * \text{national_republic}_i + \beta_{15} * \text{close_to_Moscow}_i + \\
 & + \beta_{16} * \text{criminality}_i + \beta_{17} * \text{migration}_i + \beta_{18} * \text{media}_i + \beta_{19} * \text{distance}_i + \\
 & + \beta_{20} * \text{poverty_line}_i.
 \end{aligned} \tag{1*}$$

$$\begin{aligned}
 \text{Interethnic_Crimes}_i = & \beta_0 + \beta_1 * \text{size_of_town}_i + \beta_2 * \text{aggregate_income}_i + \\
 & + \beta_3 * \text{unemployment}_i + \beta_4 * \text{density}_i + \beta_5 * \text{share_of_minorities}_i + \\
 & + \beta_6 * \text{education}_i + \beta_7 * \text{age_structure}_i + \beta_8 * \text{national_republic}_i + \\
 & + \beta_9 * \text{close_to_Moscow}_i + \beta_{10} * \text{criminality}_i + \beta_{11} * \text{migration}_i + \\
 & + \beta_{12} * \text{media}_i + \beta_{13} * \text{distance}_i + \beta_{14} * \text{poverty_line}_i.
 \end{aligned} \tag{2}$$

The dependent variable *Interethnic Crimes* is the number of interethnic crimes in the city, which is counted by the SOVA Center for Information and Analysis. The values

of this variable are calculated as a relative indicator equal to the absolute number of crimes in the considered city for each year divided by the population of this city and multiplied by the average population of the cities in the sample. As Egorov et al. (2020) show, this metric is a good proxy for the level of interethnic intolerance in the city.

In our models we use several test variables:

- *urban_environment* — an indicator of the comfort of the urban environment. The urban environment quality index developed by the Ministry of Construction, Housing and Utilities of the Russian Federation is used as data for this variable. The variable is used to test Hypothesis 1
- *size_of_town* — the size of the city; takes values from 1 to 7. 1 corresponds to cities with a population of up to 250 thousand people; 2 — cities with a population ranging from 250 to 500 thousand people; 3 — cities with a population of 500 to 750 thousand people; 4 — cities with a population of 750 to 1 million people; 5 — cities with a population of 1 to 3 million people; 6 - cities with a population of 3 to 6 million people; and 7 — cities with a population of over 6 million people. The variable is used to test Hypothesis 2
- *aggregate_income* — the logarithm of the average monthly income of a city resident in rubles according to Rosstat. The variable is used to test Hypothesis 3
- *unemployment* — the unemployment rate in the region (%) according to Rosstat
- *density* — the population density in the city, thousand people per sq. km of land area according to Rosstat. This variable is necessary as an important characteristic of the urban environment, traditionally used in research on the influence of the urban environment on tolerance. Population density can influence the frequency of interactions between people and hence the likelihood of interethnic crime
- *share_of_minorities* — the share of the non-Russian population (%) according to All-Russian Population Census of 2010
- *education* — the share of the population with higher education (%) according to All-Russian Population Census of 2010
- *age_structure* — the proportion of the adult non-elderly population (%) according to Rosstat. The use of this variable is due to the fact that the older generation is less likely to engage in physical conflicts, therefore, a significant proportion of the elderly population in the city can influence the number of crimes motivated by interethnic intolerance
- *national_republic* — a binary variable that takes the value 1 if the city belongs to one of the national republics within the Russian Federation, and 0 otherwise
- *close_to_Moscow* — a variable for the cities of the Moscow Region. Its value depends on the distance to the Moscow Ring Road. This variable equals 4 if the distance does not exceed 10 km; 3 — if the city is located at a distance of 10 to 20 km; 2 — at a distance of 20 to 30 km; and 1 — if the distance to the Moscow Ring Road exceeds 40 km
- *criminality* — the number of murders in the city per year according to Rosstat. The use of this variable is due to the fact that the number of interethnic

crimes maybe correlated with the total number of crimes. The values of this variable are calculated as a relative indicator equal to the absolute number of homicides in the city under consideration for each year divided by the population of that city and multiplied by the average population of the cities in the sample

- *migration* — an indicator of migration in the region according to Rosstat. The values of this variable are calculated as a relative indicator equal to the absolute number of migrants from other countries arriving in the region divided by the population of this region and multiplied by the average population of the cities in the sample
- *media* — a variable reflecting the index of the development of the media sphere. This variable was added to our regressions as SOVA data is based on news analytics, and the number of described crimes in some cities may be lower because of the less free press. We use data from the Mediastandart Foundation, which calculate the media sphere development rating for each region. 4 corresponds to the rating “A” — the most developed region; 3 — “B” — a developed region; 2 — “C” — an underdeveloped region; 1 — “D” — the least developed region
- *distance* — a variable for cities that are not regional centers and do not belong to the Moscow Region, taking values equal to the distance from the city to the corresponding regional center (km)
- *poverty_line* — the proportion of the population with monetary incomes below the subsistence level established in the constituent entity of the Russian Federation (%) according to Rosstat
- *housing* — a variable that takes the values of the index component that characterizes housing and adjacent spaces: apartment buildings, individual residential sectors
- *streets* — a variable that takes the values of the index component that characterizes the road network: streets, driveways, embankments
- *green_spaces* — a variable that takes the values of the index component characterizing green spaces: parks, squares, green embankments, gardens, etc.
- *public_and_business* — a variable that takes the values of the component of the index characterizing the public and business infrastructure and adjacent spaces: objects of services, catering, administrative institutions, etc.
- *social_and_leisure* — a variable that takes the values of the component of the index characterizing the social and leisure infrastructure and adjacent areas: educational institutions, medical institutions, sports, leisure and recreation, cultural institutions, etc.
- *citywide* — a variable that takes the values of the index component that characterizes the citywide space: the entire territory within the city boundaries.

In the course of working with the data, regions where the number of crimes for the 13 years under consideration was less than 10 were removed from the sample (a total of 32 regions were excluded). Data for the remaining regions, except those considered in Figure 3, are presented in Table A1 in Appendix A.

Thus, the study is based on a sample of 66 Russian cities with a population of over 100 thousand people where 2 or more crimes motivated by interethnic intolerance were committed during the period 2007–2019. A total of 858 observations are considered in the study. It is worth noting that, although this metric for measuring xenophobia is generally recognized, it has a certain distortion — the database includes only those cases that get into the media, which, in turn, are guided by topics that are relevant and popular among readers, so this metric can speak not only about the level of interethnic intolerance but also about the level of interest in xenophobic issues, which, in turn, is a sign of interethnic tension.

Data for the *urban_environment* variable, an indicator of the comfort of the urban environment, were obtained from the official website of the urban environment quality index developed by the Ministry of Construction, Housing and Utilities of the Russian Federation. Data for the variables *housing*, *streets*, *green_spaces*, *public_and_business*, *social_and_leisure*, *citywide* were obtained from the same source.

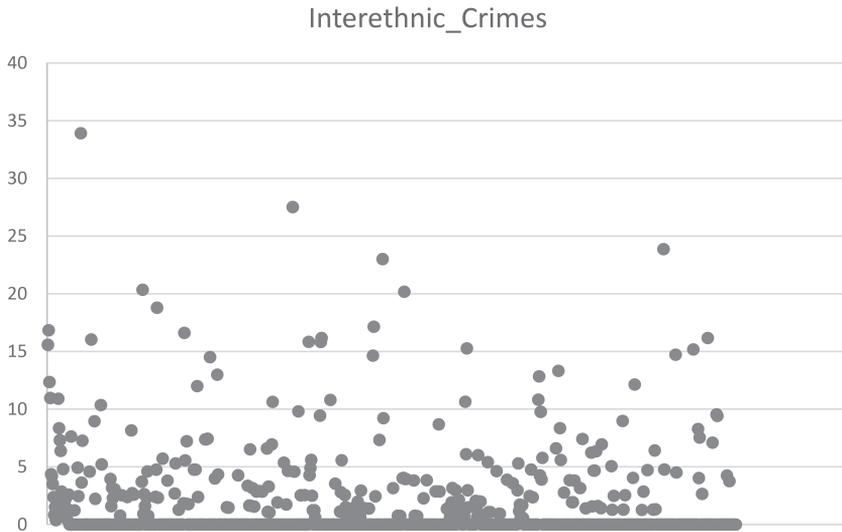
The urban environment quality index is calculated by evaluating 6 types of urban spaces in accordance with 6 criteria for the quality of the urban environment, that is, based on an assessment matrix consisting of 36 indicators, each of which can take values from 0 to 10, where 10 is the best grade. Thus, the values of the urban environment quality index range from 0 to 360, and the urban environment is considered favorable if the index value is in the range from 181 to 360 points. At the same time, the values of those indicators that are calculated for the entire city are also added to individual types of spaces. Let us consider in more detail the types of spaces assessed: housing and adjacent spaces; public and business infrastructure and adjacent spaces; street and road network; green spaces; social and leisure infrastructure and adjacent spaces; city-wide space. Evaluation is carried out according to the following criteria: safety; environmental friendliness and health; modernity and relevance of the environment; comfort; identity and diversity; management efficiency. The index was first calculated in 2018, and from that moment it is calculated once a year. The study uses values for 2018 and 2019.

The values for the variables *size_of_town*, reflecting the population in each city for each year, *density*, which reflects the density of the city's population, *aggregate_income*, reflecting the income of the urban population, *unemployment*, reflecting the level of unemployment among the urban population, *poverty_line*, reflecting the proportion of the population whose incomes are below the subsistence level, and *migration* were obtained from the website of the Rosstat.

The values for the variables *share_of_minorities*, which reflects the share of the non-Russian population, *education*, which reflects the share of people with higher education, and *age_structure*, which reflects the share of the adult non-elderly population, were obtained from the data of the All-Russian Population Census 2010. These variables are constants, which is acceptable since they do not change significantly over several years. It should be noted that the main variation in the share of the non-Russian population is associated with the presence of titular nationalities, whose share changes in the same way as the share of the Russian population.

Data for the variable *criminality*, which denotes the number of homicides in the region, were obtained from the official website of the state statistics EMISS. The values for the *media* variable, which denotes the index of media development, were obtained from the website of the Mediastandard Foundation.

Figure 4 below shows the distribution of the *Interethnic_Crimes* dependent variable. The presence of explicit outliers in the distribution is obvious.



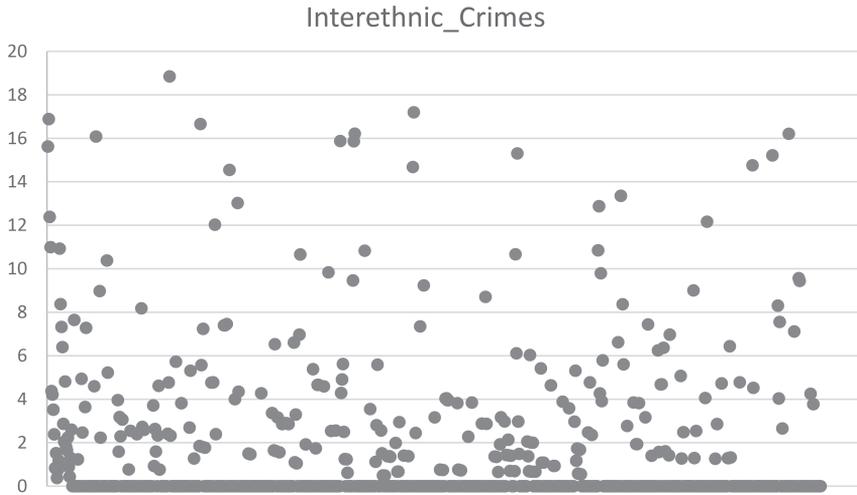
Source: calculated by the authors based on data from the SOVA Center for Information and Analysis.

Figure 4. The *Interethnic_Crimes* variable

The following outliers in the distribution were excluded:

1. Blagoveshchensk, 2009 — a total of 9 victims, a group of young people threw stones at Chinese workers, and there was also a massive brawl - an attack on black cadets of a military school.
 2. Voronezh, 2008 — a total of 22 victims, a neo-Nazi organization was operating.
 3. Lipetsk, 2013 — a total of 18 victims, a series of similar attacks, according to some sources, from an ultra-right group.
 4. Penza, 2008 — a total of 15 victims, a series of attacks by skinheads.
 5. Vladivostok, 2009 — a total of 15 victims, a series of nationalist attacks.
 6. Mytishchi, 2007 — a total of 5 victims, a series of attacks by one group of skinheads.
- A significant part of the emissions occurred in 2007–2009 when there was a surge in nationalist sentiments in Russia.

As these crimes were committed by a certain criminal organization of a certain murderer, they do not represent the overall population, we consider a series of attacks to be one crime. After excluding outliers in the distribution, the graph of the variable values looks as shown in Figure 5.



Source: calculated by the authors based on data from the SOVA Center for Information and Analysis.

Figure 5. Variable *Interethnic_Crimes* after excluding outliers in the distribution

After eliminating the outliers in the distribution, 852 observations remained in the sample. Tables A2 and A3 in Appendix A provide information about the values of the variables.

5. Results and discussion

Models (1) and (1*) are tested on a sample of data for 2018–2019, because the urban environment quality index was not calculated until 2018. Model (2) testing is carried out on a sample of data for 2007–2019.

The choice of the Weighted LS method is due to the following: the study is carried out only on data for two consecutive years, the difference between which is insignificant. The F-test of the fixed effects model gives a *p-value* of 0.8 (in the case of Model 1*, the *p-value* is 0.9), therefore, one can opt for the WLS method. The results for Model 1 are presented in the first column of Table B1 in Appendix B.

According to the regression results, the variable *urban_environment* has a serious influence on the level of interethnic intolerance. Other significant variables are *the_size_of_a_town*, *national_republic* and *Moscow_region* variable, *education*, *share_of_minorities_media* and *level_of_poverty*. The results for Model (1*) are presented in the second column of Table B1 in Appendix B. According to the regression results, the interest variables *housing*, *green_spaces*, *public_and_business* are significant.

Model (2) is tested on data for 13 years. Let's first estimate it by using a fixed effects model. The results are presented in Table B2 in Appendix B. According to the regression results, the interest variables *size_of_town* and *aggregate_income*

are significant. The following control variables are also significant: *density*, *unemployment*, *criminality*.

When using this method, the *p-value* of the F-test is less than 0.01. However, since some variables are constants, they were excluded from the model, making it impossible to assess their impact on the dependent variable. In this regard, we use the usual OLS with the addition of binary variables for each year and get the results presented in Table B3 in Appendix B. The following variables are significant: *close_to_Moscow*, *age_structure*, *education*, *density*, *aggregate_income*, *criminality*.

According to the results obtained by testing Model (1), Hypothesis 1 is confirmed. This means that, probably, the comfort of the urban environment in a Russian city can play the role of an indicator of economic well-being, thereby reducing the level of interethnic intolerance in society. Although such an influence is likely, it is not yet possible to assert for sure — for a more accurate conclusion, a study of a much larger number of years is needed, which will become feasible in the coming years.

Testing of Model (1 *) allows us to consider the impact of each component of the index. According to the results obtained, quality housing and green spaces in a city may themselves be indicators of economic well-being. However, in the case of public and business infrastructure, the situation is different — it positively correlates with interethnic crimes. The public and business infrastructure includes objects of services and services, and public catering, that is, places where people from other countries who are ready to work for less pay are traditionally in demand. In addition, this can be explained by the fact that in those Russian cities where there is an active construction and modernization of such buildings, migrant workers are likely to be attracted.

After testing Model (2) with the FE model, the following results were obtained. Hypothesis 2 is confirmed, that is, the size (population) of a Russian city affects the level of interethnic intolerance in it. According to the study, the level of interethnic intolerance is worse in more populated Russian cities. This can be explained by the peculiarities of life in a big city: a huge flow of people of various beliefs and views, a greater opportunity (compared to a small city) not being caught committing a crime.

We can unequivocally speak about the confirmation of Hypothesis 3 — the incomes of city residents have a significant impact on the level of interethnic intolerance in it, reducing it. This confirms the relevance of the conclusions of foreign studies concerning Russian data.

It is also worth mentioning the significant influence of the following factors: unemployment, population density, and the number of homicides, with the latter two factors having a negative impact on the number of crimes motivated by interethnic intolerance. The latter can be explained by the fact that with a high crime rate, the region is less attractive for immigrants, who are a vulnerable group. Moreover, in cities with high homicide rates, additional murders are not significant news and are less likely to hit the news, and therefore less likely to get into the database. In the case of density, it can be assumed that this is due to economic development — the more developed and richer the city, the higher the population density there, thus, this is a consequence of the economic prosperity of the city, which can reduce the level of interethnic intolerance.

The unemployment rate is positively associated with the level of interethnic intolerance in a Russian city, which can be caused by both an increase in economic insecurity and an increase in competition for jobs.

Since some of the variables in our model are constant over time, we cannot estimate their significance using panel regression with fixed effects. Therefore, we use the usual OLS, taking into account the variables associated with time periods.

Thus, according to the regression with the OLS, we can say that the influence of the share of ethnic minorities is insignificant — in more ethnically heterogeneous Russian cities, there is no greater number of crimes motivated by interethnic intolerance. This can be explained by the historical context of the country: since a certain number of ethnic minorities historically live in Russia, they are not considered “immigrants,” and their residence in the territory is taken for granted by the ethnic majority.

In addition, this method provides some information about other missing variables. Thus, proximity to Moscow, age structure, and education have a significant impact, and proximity to Moscow and the proportion of the adult working population reduce the number of crimes motivated by xenophobia, while the proportion of people with higher education, on the contrary, positively correlates. The first factor can be explained by the fact that the closer a city near Moscow is to the Moscow Ring Road, the more expensive housing there is and the more economically prosperous people live there. The second factor can be explained by the fact that the share of the adult working-age population can be a signal of the well-being of the city since working-age adults are likely to choose more prosperous cities with greater opportunities for career growth. In the case of education, apparently, the influence of this factor cannot be interpreted at the moment and further research is needed. Perhaps in further studies it makes sense to consider not the proportion of people with higher education, but the average number of years of education in the adult population, the proportion of people without education, except for school, etc.

Thus, urban development, the comfort of the urban environment can reduce the level of interethnic intolerance in the city. In addition, factors such as the well-being of city residents, the level of employment in the city, and its ethnic structure may play a role. All this allows us to conclude that in more developed (comfortable, wealthy) Russian cities with a high level of employment, the level of interethnic intolerance may decrease.

Conclusion

This work is devoted to the study of the factors of urban development that affect interethnic intolerance in Russian cities. In the course of the work, the factors influencing the cases of manifestation of xenophobia were considered. Based on the analyzed scientific literature, it can be concluded that manifestations of xenophobia depend on economic stability and some urban characteristics.

The analysis included 66 Russian cities with a population of over 100 thousand people, where two or more crimes motivated by interethnic intolerance were committed during

the period 2007–2019. Two samples were formed for the study: the first included 132 observations for the period 2018–2019, the second included 852 observations for the period from 2007 to 2019.

Based on the results of the empirical study, it was found that the following factors affect the level of interethnic intolerance in a city: the quality of the urban environment, the size of the city, the incomes of its residents, employment in the city, population density, and age structure. The higher each of the indicators, the lower the interethnic intolerance.

The results obtained in this work complement the field of research devoted to the study of factors influencing interethnic intolerance in cities. First of all, the results were obtained on the influence of the quality of the urban environment on interethnic tension in cities. Moreover, the results from the previously unexplored Russian market were supplemented.

A more detailed study of the influence of the quality of the urban environment on the manifestations of xenophobia can be considered as one of the highest priorities for further research. There is also a need for a deeper study of how factors such as ethnic diversity in a city and education of its inhabitants influence interethnic intolerance.

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Appendix A. Descriptive statistics

Table A1. The number of crimes motivated by interethnic intolerance by region

Region	Number of crimes	Region	Number of crimes
Omsk Region	10	Tula Region	21
Republic of Bashkortostan	10	Volgograd Region	22
Republic of Karelia	10	Oryol Region	22
Ulyanovsk Region	10	Penza Region	25
Yaroslavskaia Oblast	10	Lipetsk Region	26
Tomsk Region	11	Kaluga Region	27
Republic of Adygea	11	Primorsky Krai	27
Kirov Region	12	Ryazan Oblast	27
Perm Territory	12	Vladimir Region	28
Khabarovsk Region	14	Novosibirsk Region	30
Altai Region	15	Samara Region	31
Republic of Tatarstan	15	Krasnodar Region	33
Amurskaya Oblast	16	Sverdlovsk Region	37
Tver Region	17	Stavropol Region	39
Chelyabinsk Region	18	Voronezh Region	44
Kaliningrad Region	20	Nizhny Novgorod Region	87
Rostov Region	20		

Source: SOVA Center for Information and Analysis.

Table A2. Values of variables in Models (1) and (1*)

	Average	Standard Deviation	Minimum	Maximum
<i>Interethnic_Crimes</i>	0	2	0	15
<i>urban_environment</i>	187	27	104	283
<i>size_of_town</i>	3	1	1	7
<i>national_republic</i>	0	0	0	1
<i>close_to_Moscow</i>	0	1	0	4
<i>age_structure</i>	62	2	59	68
<i>education</i>	24	4	18	40
<i>share_of_minorities</i>	12	11	3	64
<i>density</i>	3	2	0	16
<i>aggregate_income</i>	11	0	10	11
<i>unemployment</i>	5	2	1	10

Table A2. Continued

	Average	Standard Deviation	Minimum	Maximum
<i>migration</i>	766	888	33	4139
<i>criminality</i>	45	24	13	139
<i>media</i>	3	1	1	4
<i>distance</i>	9	33	0	225
<i>poverty_line</i>	12	3	7	22
<i>housing</i>	37	7	16	55
<i>streets</i>	30	7	10	48
<i>green_spaces</i>	27	8	7	49
<i>public_and_business</i>	30	7	15	52
<i>social_and_leisure</i>	30	6	14	50
<i>citywide</i>	33	6	23	58

Source: calculated by the authors based on data from the SOVA Center for Information and Analysis and Rosstat.

Table A3. Values of variables in model (2)

	Average	Standard Deviation	Minimum	Maximum
<i>Interethnic_Crimes</i>	1	3	0	19
<i>size_of_town</i>	3	1	1	7
<i>national_republic</i>	0	0	0	1
<i>close_to_Moscow</i>	0	1	0	4
<i>age_structure</i>	62	2	59	68
<i>education</i>	24	4	18	40
<i>share_of_minorities</i>	12	11	3	64
<i>density</i>	3	2	0	16
<i>aggregate_income</i>	10	0	9	11
<i>unemployment</i>	6	2	1	15
<i>migration</i>	489	780	9	6519
<i>criminality</i>	87	58	13	407
<i>media</i>	3	1	1	4
<i>distance</i>	9	33	0	225
<i>poverty_line</i>	13	4	7	32

Source: calculated by the authors based on data from the SOVA Center for Information and Analysis and Rosstat.

Appendix B. Empirical results

Table B1. Evaluation results of Models (1), (1*)

	Weighted LS (1)	Weighted LS (1*)
<i>urban_environment</i>	−0,01*** (0,001)	
<i>housing</i>		−0,02*** (0,006)
<i>streets</i>		0,0004 (0,004)
<i>green_spaces</i>		−0,01** (0,004)
<i>public_and_business</i>		0,01*** (0,005)
<i>social_and_leisure</i>		0,01 (0,004)
<i>citywide</i>		0,003 (0,004)
<i>size_of_town</i>	−0,09*** (0,018)	0,005 (0,025)
<i>national_republic</i>	−0,19** (0,093)	−0,18 (0,169)
<i>close_to_Moscow</i>	−0,15*** (0,05)	−0,04 (0,051)
<i>age_structure</i>	−0,001 (0,012)	−0,02 (0,026)
<i>education</i>	0,06*** (0,01)	0,02** (0,01)
<i>share_of_minorities</i>	0,004* (0,002)	0,01 (0,005)
<i>density</i>	0,01 (0,017)	−0,02 (0,017)
<i>aggregate_income</i>	0,05 (0,085)	0,12 (0,158)
<i>unemployment</i>	−0,0006 (0,018)	−0,03 (0,028)
<i>migration</i>	0,00 (0,000)	0,00 (0,000)
<i>criminality</i>	−0,0003 (0,001)	−0,001 (0,001)
<i>media</i>	0,06*** (0,022)	−0,02 (0,038)

Table B1. Continued

	Weighted LS (1)	Weighted LS (1*)
<i>distance</i>	0,00 (0,001)	0,001 (0,001)
<i>poverty_line</i>	-0,012* (0,006)	-0,001 (0,018)
<i>constant</i>	-0,11 (0,769)	0,13 (1,404)
<i>Adjusted R²</i>	0,59	0,43

Note: LS — Ordinary Least Squares (OLS); *** p < 0.01, ** p < 0.05, * p < 0.1.

Source: calculated by the authors.

Table B2. Results of evaluating Model (2) by the FE method

	FE
<i>size_of_town</i>	1,02** (0,434)
<i>national_republic</i>	
<i>close_to_Moscow</i>	
<i>age_structure</i>	
<i>education</i>	
<i>share_of_minorities</i>	
<i>density</i>	-1,24*** (0,358)
<i>aggregate_income</i>	-2,93*** (0,863)
<i>unemployment</i>	0,28* (0,142)
<i>migration</i>	-0,00 (0,0002)
<i>criminality</i>	-0,01* (0,005)
<i>media</i>	0,49 (0,353)
<i>poverty_line</i>	0,04 (0,067)
<i>constant</i>	28,53*** (9,225)
<i>Fixed time effects</i>	+
<i>Fixed area effects</i>	+
<i>LSDV-R²</i>	0,24

Note: FE — fixed effects model; *** p < 0.01, ** p < 0.05, * p < 0.1.

Source: calculated by the authors.

Table B3. Results of evaluating Model (2) by the OLS method

	LS
<i>size_of_town</i>	-0,08 (0,094)
<i>national_republic</i>	-0,28 (0,593)
<i>close_to_Moscow</i>	-0,55*** (0,114)
<i>age_structure</i>	-0,31** (0,108)
<i>education</i>	0,16*** (0,035)
<i>share_of_minorities</i>	-0,001 (0,017)
<i>density</i>	0,06** (0,026)
<i>aggregate_income</i>	2,06*** (0,544)
<i>unemployment</i>	0,11 (0,122)
<i>migration</i>	-0,00 (0,0001)
<i>criminality</i>	-0,01** (0,003)
<i>media</i>	0,01 (0,18)
<i>poverty_line</i>	0,05 (0,043)
<i>distance</i>	-0,001 (0,002)
<i>constant</i>	-1,43 (3,867)
<i>Fixed time effects:</i>	+
<i>dt_2</i>	-0,06 (0,612)
<i>dt_3</i>	-0,61 (0,7)
<i>dt_4</i>	-1,1 (0,748)
<i>dt_5</i>	-2,59*** (0,687)
<i>dt_6</i>	-3,42*** (0,712)

Table B3. Continued

	LS
<i>dt_7</i>	–3,11*** (0,843)
<i>dt_8</i>	–3,68*** (0,837)
<i>dt_9</i>	–4,58*** (0,853)
<i>dt_10</i>	–4,7*** (0,902)
<i>dt_11</i>	–5,04*** (0,901)
<i>dt_12</i>	–5,13*** (1,005)
<i>dt_13</i>	–5,32*** (1,067)
<i>Adjusted R²</i>	0,17

Note: LS — Ordinary Least Squares (OLS); *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: calculated by the authors.