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Ethnic Diversity in Romania. A 20th and 21st Centuries Censuses' Data Analysis

Abstract. *Voluntary assumed and self-declared ethnicity challenge specific data collected within the censuses. Despite this limit, it is of vital importance to consider the characteristics of a population with respect to ethnicity and recent history. Globalisation, increased migration, the demand for policies against discrimination, and tailored interventions targeting the specific needs of different communities or areas are shaping both modern societies and our adaptive policies that balance development with cultural integration. This study undertakes an examination of ethnic diversity in Romania using 1930 to 2021 censuses data, delving into the evolution of Romania's ethnic composition, the distribution of the population by ethnicity, and an analysis of how the population's ethnicity concentration has changed over time (the same timespan censuses years) and space (across development regions). The results show a declining level of entropy, a distinction between the magnitude and structure of diversity becoming relevant for understanding potential disparities in socioeconomic status, intergroup relations, and various characteristics of different populations (based on ethnicity). The paper captures the structural diversity dimension linked to the regional socioeconomic development.*

Keywords: *census data, demographic changes, entropy measurement, entropy in population distribution, ethnic composition, ethnic diversity, regional development.*

JEL Classification: C1, C02, C60, J11, J15, J18, R23, R58.

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1. Introduction

Ethnic diversity is considered to be "an important social asset" of any state, as it fosters creativity and enhances problem solving (Putnam, 2007). In the long run, ethnic diversity is expected to increase in all modern societies, even if in the short run it raises important challenges such as low level of trust and social isolation (Putnam, 2007). However, in Europe, ethnically heterogeneous environments are not necessarily a source of conflicts and do not undermine social connections (van der Meer and Tolsma, 2014). On the contrary, in Europe, ethnic diversity has a positive effect on productivity and well-being (Akay et al., 2017).

Eastern European countries have some particularities regarding ethnic diversity. Various historical powers held territories in these countries, which caused people to form ties based on kinship and ethnicity rather than based on administrative and political institutions (Wolczuc and Yemelianova, 2008). Moreover, ethnicity was linked to religion and language, generating a series of conflicts for affirmation such as the uprisings of the Serbs during the Ottoman occupation (Stroschein, 2017). Also, while during the communist era, interethnic relations were decided in a totalitarian manner. In the Post-Communist Europe, democratic mechanisms were put in place to address ethnic diversity in accordance with the international consensus to prevent future conflicts and to maintain territorial integrity (Singh, 2001). As a result, most interethnic issues, such as those related to the Hungarian/Magyar minority, are addressed in a constructive manner (Carter and Turnock, 2000).

Among the ex-communist countries, the case of ethnic diversity in Romania is particularly important. That is because "Romania is the only country in Eastern Europe to give the constitutional right to organised and recognised ethnic minorities to occupy one seat in the lower chamber of the Parliament, regardless of the voter turnout" (Triandafyllidou, 2011, p.148). Therefore, this study aims to capture the most important aspects of ethnic diversity in Romania between 1930 and 2021 using census data.

The analysis of the distribution of the population by ethnicity presents challenges because, in most countries, ethnicity data are available only in decennial censuses. Moreover, since these data are obtained through self-reporting, statistics on ethnicity have been challenged by different ethnic groups (Manuilă, 1940). It should be noted that, "in general, those who challenge the accuracy of a census must provide evidence, in accordance with the principle of *cujus* affirmation *ejus* probation." (Trebici, 1996). Also, according to the European Commission, collecting data on ethnicity through self-reporting is necessary due to the subjective nature of the term.

2. The evolution of the ethnic composition of the Romanian population

The post-World War I period involved for Romania a completion of former territories. It also brought to some massive population shifts: about 200,000 people to Hungary, and 42,000 Turks from former Ottoman possessions in Dobrogea and

southern Bessarabia settled in Turkey, more than 200,000 Jews (some arrived during the conflict from Poland and Soviet Russia) left. Another more than one million Romanians is estimated to have been kept abroad (some in neighbouring countries, some in Central Europe countries, in North America, or even Australia. The distribution of the Romanian population by ethnicity also represented a powerful political instrument, while the method used to collect ethnicity data constituted a source of political and scientific controversy (Teodorescu, 1928; Istrate, 1930; Manuilă, 1938).

Romania is an interesting case because it is a state where some regions where the ethnic Hungarians used to be the politically dominant group became later an ethnic minority (Macintosh et al., 1995). Thus, one of the objectives of the 1930 Census was "to establish as accurately as possible the distribution of the population by ethnic groups" (Manuilă, 1938, p. XI), taking into account "the ethnic group to which one feels bound by tradition and feelings" (Manuilă, 1938, p. XII). Although data on ethnicity collected via self-reporting are often challenged, Ladanyi and Szelenyi (2001) argue that the use of ethnicity data collected by an observer is affected by the social characteristics, prejudices, and interests of that observer.

In order to ensure impartiality, collection of ethnicity data in the subsequent censuses that were carried out in Romania continued to be self-reported. The need for ethnicity data collected according to objective criteria, that are scientifically validated internationally, is all the more powerful since both the media and the academics in Romania experienced intense debates on the topics of national identity and interethnic relations after the Revolution of 1989. These debates were marked by strong, vocal political personalities, who created a situation that was as tense as the climate prevailing during the interwar period (Bența, 2017).

The census data show that during the last hundred years, the Romanian population, both in numbers and ethnic structure, has experienced considerable transformations from one period to another, confirming an observation advanced by Eberhardt and Owsinski (2015). The authors noted that Romania's ethnic composition in 1930 was one of the most complex in Central and Eastern Europe (Eberhardt and Owsinski 2015). Until the First World War, the Hungarians and Austrians comprised 1.6% of the total population, representing the most important ethnic groups in Romania. The other ethnic groups also had an important share in the total population of Romania (4.8%). Currently, the "historical mismatch between state and ethnicity" (Dumbravă, 2017, p.1491) is one of the causes of the demographic decline in all the countries of Central and Eastern Europe (Dumbravă, 2017).

These changes are the result of demographic processes and historical evolutions. Table 1 presents the population, area, and share of the three most important ethnic groups during the censuses conducted in 1912, 1930, 1956, 1966, 1977, 1992, 2002, 2011, and 2021. We analyse the census data in detail and explain these developments based on the demographic literature, identifying the main causes that led to the ethnic structure observed at the 2011 census.

Regarding the evolution of the size and the ethnic distribution of the Romanian population, three important periods can be identified, and these are associated with the territorial changes that resulted during the two World Wars: (i) the period before the First World War, during the Old Kingdom, (ii) 1918 until the end of the Second World War, and (iii) 1950 to present. For the period before the First World War, although territorial changes occurred after the Berlin Treaty of 1879, they did not affect significantly the demographics of the Romanian population (Manuilă, 1940).

Table 1. Total Romanian population, country territory and proportions of the largest three ethnic groups

Census	Population with declared ethnicity	Territory (Km ²)	Percent of Ethnic Group in Total Population (%)			
1912	7,234,920	130,177	Romanian	Magyar	Austrian	Other
			93.5	1.0	0.6	4.9
1930	14,275,677	294,967	Romanian	Magyar	German	Other
			77.88	9.97	4.44	7.71
1956	17,485,285	237,500	Romanian	Magyar	German	Other
			85.76	9.08	2.20	2.96
1966	19,100,854	237,500	Romanian	Magyar	German	Other
			87.67	8.48	2.00	1.84
1977	21,559,458	237,500	Romanian	Magyar	German	Other
			88.13	7.95	1.67	2.26
1992	22,809,269	237,500	Romanian	Magyar	Roma	Other
			89.47	7.12	1.76	1.64
2002	21,679,033	238,391	Romanian	Magyar	Roma	Other
			89.49	6.60	2.47	1.44
2011	18,884,831	238,391	Romanian	Magyar	Roma	Other
			88.92	6.50	3.29	1.29
2021	16,568,889	238,391	89.33	6.05	3.44	1.18

Sources: RPL 2021 table 2.01 (Tabel-2.01.xls (live.com)); RPL 2011 vol 2, table 1 for the stable population and distribution of the population by ethnicity, Statistical Yearbook of Romania 1930 - Ministry of Labor, Health and Social Welfare Institute of General Statistics 1932 for the area since 1930, Statistical Yearbook of RPR 1957 - Directorate Central Statistical Yearbook, Statistical Yearbook of the Socialist Republic of Romania 1966 - Central Statistical Directorate, Statistical Yearbook of the Socialist Republic of Romania 1977 - Central Statistical Directorate, Statistical Yearbook of Romania 1992 - National Commission for Statistics, Statistical Yearbook of Romania 2002 - National Institute of Statistics, Statistical Yearbook of Romania 2011 - National Institute of Statistics.

The territorial changes that Romania experienced from 1913 (adding the Quadrilateral territory) to 1919 (adding Bessarabia in 1917 and Transylvania,

Bukovina, Banat in 1919), along with the urbanisation process and differences in the reproductive behaviour of the various ethnic groups led to significant changes in the ethnic structure (Manuilă, 1940). Thus, according to the same source, the Hungarian ethnic population was geographically and ethnically concentrated in the former Austro-Hungarian provinces, having a considerably lower birth rate compared to Romanians (23.3 per 1,000 compared to 29.1 per 1,000); ethnic Germans and Jews lived mainly in the cities and had a lower birth rate compared to Romanians (19.5 per 1,000 and 19.4 per 1,000). In 1930, the share of Romanians in the total population decreased by 15.6 percentage points compared to 1912, while the share of the Hungarian, German, and other ethnic populations increased by approximately 9 and 4 percentage points, respectively.

After World War II, Romania's ethnic structure changed again. Multiple factors led to this change: the massive deportation of the German ethnic groups from Transylvania and Banat which led not only to the diminution of this ethnic group, but also to the destruction of traditional-German communities. Antonescu regime's policy of mass killing or deportation of the Jewish population during World War II, which aimed to create a Romanised society (Ionescu, 2010). In this context, there was an increase in the share of the Romanian ethnic population, a stagnation in the share of the Hungarian ethnic population, and a sharp decrease in the share of the German and other ethnic groups.

Furthermore, following World War II, there were major changes in the ethnic distribution of Romania's population, even though the country's territory did not experience major changes. As can be seen from Table 1, the most important change in the ethnic structure took place after 1989. Data from the 1992 census shows that the Romanian, Hungarian and Roma populations had the highest shares in the total population, while the censuses from 1956 and 1977 showed that Romanians, Hungarians, and Germans represented the ethnic groups with the highest share.

Regarding the results from the censuses of 1956 and 2021, it should be noted the increase of the share of the Romanian ethnic population by more than 3.5 percentage points and of the Roma population by 2.9 percentage points. In parallel with these changes, the same period witnessed declines in the share of Magyars (3 percentage points), Germans (more than 2.0 percentage points), and other ethnic groups (more than 1.7 percentage points). Our analysis indicates an overall reduction in the ethnic diversity of the Romanian population if we take into account the ethnic structure of the population during this period.

It should be noted that during the 2011 and 2021 population censuses, no information was collected on ethnicity for a large segment of the population: 1,237 million, representing 6.15% of the resident population for 2011 population census; and 2,485 million, representing 13.04% of the resident population for 2021 population census. The ethnic structure of the resident population of Romania at this census was determined based on the information registered for 18,885 million, representing 93.85% of the resident population for 2011 population census, and 16,569 million, respectively, representing 87.00% of the resident population for 2021 population census. Thus, the analysis of the degree of ethnic diversity will be

presented based on several characteristics of the dynamics of the ethnic structure of Romania's population using the absolute values recorded for the ethnic groups in 1956 and 2002. This comparison is presented for two reasons: first, during this period, Romania did not undergo territorial changes, and the second reason is related to the availability of data, both in terms of structure and absolute values.

Between 1956 and 2002, the Romanian population increased by 4.2 million people, representing a growth of 29.4%. This increase was mainly due to the pronatalist policy promoted and enforced by the communist party. It should also be noted that Vasile Ghețău's estimates, as quoted by Trebici (1996), indicate that 90.1% of the 1990 Romanian population of approximately 23 million were of Romanian ethnicity, 7.8% of Hungarian ethnicity, and 1.2% of German ethnicity.

During the same period (1956-2002), the largest increase was registered in the Roma ethnic group. Specifically, the number of ethnic Roma increased more than 5.1 times, representing in absolute numbers an increase of almost 431,000 people. At the beginning of this period, the Roma population represented 0.6% of the country's population, this being the fifth largest ethnic group, after Romanians, Hungarians, Germans, and Jews. In 2002, its share increased to 2.47% of the resident population, representing the third largest ethnic group, after Romanians and Hungarians.

The evolution of the share of this ethnic group in the total population of Romania is marked by important historical events. First, the Roma ethnics had the status of slaves in the Romanian principalities between the 13th century and the middle of the 19th century (Beck, 1989). In Transylvania, as it was the case with the entire Habsburg Empire, the Roma identity was removed primarily through the harsh policies of forced assimilation, including mixed marriages (Ahmed et al. 2007). Second, according to the United States Holocaust Memorial Museum, approximately 26,000 Roma people were deported during World War II, mostly from Bukovina, Bessarabia, Moldova, and Bucharest to Transnistria.

During the later years of the communist regime, many policies aimed to address the inequities experienced by the Roma population and led to an increase in their level of education, a shift from nomadic lifestyle to settlements, and an increase in labour force participation rates. However, the integration of Roma people in the society was not successful, and many returned to their ancestral lifestyle immediately after the fall of communism (Marushiakova and Popov, 2008). Following the 1989 revolution, many Roma people were concentrated in the ghettos around the cities and continued to have a low standard of living (Mionel and Neguț, 2011). In addition, Roma people in some regions were the target of violent attacks in 1990 and 1991, which even led to the destruction of their homes (Cernat, 2012).

A very important demographic aspect regarding the Roma ethnic group is its high fertility rate. According to a study based on the 2011 census authored by Andrei (2018), the average number of children born to Roma women who had given birth to at least one child was 3.9, compared to 2.3 for Romanians and Hungarians. Andrei's study showed that Roma women give birth to their first child at a very young age (16 to 17 years old), population having a very high fertility rate, explained

by cultural norms, as well as a low educational level, and limited or no use of modern means of contraception. These factors explain the increase in the share of Roma people in the total population of Romania, despite the sustained oppression this group has suffered in modern history.

Also, during this period (2002-2021), there were increases in the number of ethnic Turks and Ukrainians. The number of ethnic Turks in Romania increased during this period by 0.03%. In 2021, ethnic Turks represented 0.11% of Romania's resident population. Ukrainians, a relatively small community in Romania, representing 0.24% of the resident population in 2021, registered an increase of only 0.07% during the above-mentioned period, representing an increase of more than 600 people. It should be mentioned that the Ukrainian community, one of the small ethnic groups during the communist period, was to a lesser extent the victim of the communist repression (Bottoni, 2010).

The Hungarian ethnic group, which represented 6.05% of the resident population registered in the 2002 census, suffered a decline of 9.8%, corresponding to a decrease of 155,900 people. The causes of this decline are multiple. Kligman (1992) shows that, before 1989, ethnic Hungarians had access to contraceptives on the black market, and although pronatalist measures were common for all Romanian citizens, they were enforced discriminatorily, in order to increase birth rates within the Romanian ethnic group. Analysing the data from the 1992 and 2002 censuses as well as the administrative records from the same period, Veres (2007) shows that the fertility rate for Hungarians is lower compared to that of Romanians and children born to mixed families were generally declared as Romanians in official records.

Jews registered the most pronounced decline (more than 96%) during the period 1956 - 2002. If in 1956 there were 451,892 Jews in Romania, in 2002 their number was reduced to only 5,785. The largest decrease in this ethnic group, of more than 100,000, was recorded between 1956 and 1966. It should be noted that more than 450,000 Jews were registered during the 1930 census. The large decline is explained primarily by the massive exodus of the Jews from Romania, with the indirect consent of the authorities, immediately after the World War II (Kochavi, 1995). The massive emigration of Jews from Romania to Israel resumed in 1967, as the state of Israel began paying a sum of money to the Romanian government for each Jew that was allowed to emigrate.

A massive decline (84.5%) was also registered among the ethnic Germans. During the examined period, their number decreased from 384,708 in 1956, which represented 2.2% of the resident population, to only 59,764 in 2002, representing approximately 0.2% of the resident population of Romania. It should be mentioned that in 1930, this community numbered approximately 634,000 and was the third largest ethnic group, representing more than 4.4% of the Romanian population. The largest decline for this ethnic group, of almost 240,000 people, occurred between 1977 and 1992. The main causes of this decline are the lower fertility rates, which can be explained by the higher level of education and access to contraceptives on the black market even before 1989 (Dumbravă, 2017), and the massive wave of

emigration to Germany, Austria, Switzerland, and the United States immediately after 1990 (Kordel and Lutsch, 2018).

Comparing the ethnic composition at the 2011 and 2021 censuses, we observe an increase in the ethnic population of 0.41 percentage points for Romanians, a decrease of 0.45 percentage points for Hungarians, and 0.15 percentage points for the Roma ethnic groups (Table 1).

3. Distribution of population by ethnicity in 2021, 2011 and 1930 censuses

When evaluating the data on ethnicity from the most recent census, one should consider the number of people who did not declare their ethnicity. That is why, assessing the changes in population related to this variable must be performed exclusively about structure, not in absolute numbers. The sum of the shares of the first three major ethnic groups (Romanians, Magyars, and Roma) did not register significant changes at the 2021 census compared to the 2011 census (99.09% in 2021 compared to 98.98% in 2011). The 0.14 pp difference is arguably insignificant. Moreover, at the 2021 census, 2,485,000 persons (13% of the total number of persons who completed the questionnaires) did not declare their ethnicity.

The changes in the Romanian ethnicity profile over the past century, both numerically and as a percentage of the total population, are significant. During the 1930 population census, Romanians represented 71.9% of the country's population, Hungarians 7.9%, Jews (Mosaics) 4.2%, Germans 4.6%, Ruthenians and Ukrainians 3.2%, Bulgarians 2.0%, Russians 2.3%, Turks and Tatars 1.0%, and others from other nations and less numerous (Manuilă, 1940). At the 2021 census, the ethnic composition was very different. Although there are multiple explanations for these changes, two factors are keys in explaining the changes in the ethnic structure of the population over a long-time horizon: differences in fertility rates by ethnicity and differences in the internal and external migration of veracious ethnic groups.

4. An evaluation of ethnic diversity

Generally, entropy is a measure used to capture and describe complex systems and to assess population stability (Demetrius, 1989). Various findings generally suggest that population entropy could help to understand population dynamics, genetic equilibrium, and the effects of environmental factors (mostly historical, in our case) on the above-mentioned demographic stability.

We will further use entropy as a measure of the level of ethnic segmentation of the Romanian population using the ethnic structure of the population determined based on data from population censuses conducted in Romania between 1930 and 2012. Generally, lower values of entropy indicate a higher-level concentration of the population by ethnicity.

The entropy is used in this study to measure the degree of ethnic diversity in a specific geographic area:

$$E_t = - \sum_{i=1}^p y_{it} \lg(y_{it}) \quad (1)$$

where y_{it} , $i = 1, \dots, p$ represent the share of Romanian, Hungarian, Roma and other ethnic groups in the total population in a specific census.

Table 2 shows the evolution of the entropy of the distribution of the Romanian population by ethnic group during the censuses for the period 1930 - 2021. The results reveal an increase in the degree of concentration of the population by ethnicity during this period. Several key factors have shaped the evolution of the ethnic diversity of the Romanian population over long periods of time, and these are different from one ethnic group to another. Among the most important factors, we list the emigration for certain ethnic groups, the exchange of populations, the deportations, the ethnic genocide, and differences in fertility rates among ethnic groups (Trebici, 1996).

Table 2. Entropy for the ethnic distribution of the Romanian population, 1930-2021

	Entropy value
1930	0.394
1956	0.261
1966	0.226
1977	0.221
1992	0.200
2002	0.202
2011	0.208
2021	0.202

Source: Authors' calculations based on 2021 Census data.

Andrei et al. (2020) analysed the recorded ethnicity of a child resulting from a mixed marriage, and the fertility rates for mixed marriages. The answers must be sought both in the census data and the cultural traditions of each ethnic group. The presence of well-defined ethnic identities, with rights recognised in official documents, was one of the elements of the democratisation process in the former Soviet countries, including Romania (Beissinger, 2008; Csergo and Goldgeier, 2013).

In addition, the recognition of minority rights in Romania has been an important element in shaping relations with neighbouring states, especially since these are kin states that host each other's ethnic groups (Žilović, 2012; Csergo and Goldgeier, 2013). In particular, the family, as a central element of the society since ancient times, is a decisive factor in changing the ethnic structure of the population of a country or a geographical region. Therefore, an analysis of the behaviours of people of different ethnicities regarding marriage, especially interethnic marriages, can provide important insights about the change of ethnic structure over time.

5. Ethnic distribution by development region

The development regions refer to the regional divisions created in Romania in 1998 to better coordinate regional development as the country progressed toward accession to the European Union. The development regions correspond to NUTS II-level divisions in European Union member states. Despite becoming increasingly significant in regional development projects, Romania's development regions do not actually have an administrative status and do not have a legislative or executive

council or government. Rather, they are used for allocating European Union funds for regional development, as well as for collection of regional statistics.

There are eight development regions in Romania (excepting the Bucharest-Ilfov region), are named by their geographical position in the country. There are significant differences among Romania's eight development regions in the distribution of the population by ethnicity. The last column in Table 3 shows the distribution of the Romanian population in the eight regions at the censuses organised after 1990. Using data from the 2011 census and the latest one (2021), we examined the distribution by region for the most important ethnic groups.

For the 2021 census, we note that the largest part of the Magyar population is concentrated in two regions: Centre and North-West. Approximately 93.4% of the resident population of Hungarian ethnicity in Romania live in these two regions. About 5.8% of ethnic Hungarians have their registered residence in the Western region, and only a small share of this ethnic group resides in other regions. In the Centre region, more than 28.5% of the population is of Hungarian ethnicity, and in the North-West region, the corresponding share is 15.9%.

Approximately 57% of the Roma population live in three regions: North-West, Centre, and South - Muntenia. In the other five regions, we find a smaller proportion of the Roma ethnic group. In three regions, North-West, South-East and West, we find important communities of other ethnicities, other than the three ethnic groups mentioned above. Specifically, three-fourths of the population of other ethnic groups reside in these three regions.

Regarding the three largest ethnic groups in Romania, it should be noted that they are distributed differently in urban and rural areas. While Romanians and Hungarians are distributed in a relatively equal proportion between urban and rural localities, with a small advantage for the population distributed in urban areas for both ethnic groups, the Roma population is unevenly distributed: around 63% live in rural areas and 37% in urban areas. In addition, certain ethnic groups are concentrated in urban areas (Jews and Armenians in proportion of 95%, Turks - 77%, Greeks and Tatars - 71%, Germans - 69%), while other ethnic groups are found in a higher proportion in rural areas (Ukrainians and Croats - around 89%, Czechs and Poles around 68%). The same characteristics regarding the distribution of the population of each ethnicity are recorded in relation to the data from the last census: the small ethnic groups are situated in urban areas, while Romanians and Hungarians are distributed in relatively equal shares in the two environments.

Table 3. Ethnic distribution by development Region, 1992-2011 (in %)

Development Region	Ethnic Group	1992	2002	2011	2021
All Regions	Romanian	89.47	89.49	88.92	89.33
	Magyar	7.12	6.6	6.5	6.05
	Roma	1.76	2.47	3.29	3.44
	Other	1.65	1.44	1.29	1.18
R1 – North-West	Romanian	74.13	75	74.93	77.27
	Magyar	20.88	19.32	18.33	15.90
	Roma	2.50	3.50	4.62	4.90
	Other	2.49	2.18	2.12	1.92

Development Region	Ethnic Group	1992	2002	2011	2021
R2 – Centre	Romanian	64.57	65.38	64.42	65.64
	Magyar	30.75	29.95	30.06	28.51
	Roma	3.27	3.96	4.96	5.37
	Other	1.41	0.71	0.56	0.48
R3 – North-East	Romanian	98.39	97.9	97.45	97.23
	Magyar	0.16	0.15	0.15	0.18
	Roma	0.74	1.22	1.77	1.92
	Other	0.71	0.73	0.63	0.67
R4 – South-East	Romanian	95.81	95.25	94.29	94.21
	Magyar	0.08	0.06	0.04	0.03
	Roma	1.05	1.71	2.94	3.14
	Other	3.06	2.98	2.73	2.62
R5 – South - Muntenia	Romanian	97.84	96.9	95.68	95.68
	Magyar	0.06	0.05	0.03	0.02
	Roma	1.97	2.92	4.1	4.07
	Other	0.13	0.13	0.19	0.22
R6 – Bucharest-Ilfov	Romanian	97.56	96.92	96.87	97.71
	Magyar	0.36	0.27	0.18	0.15
	Roma	1.4	1.72	1.96	1.16
	Other	0.68	1.09	0.99	0.99
R7 – South-West Oltenia	Romanian	98.26	97.15	96.55	95.80
	Magyar	0.08	0.06	0.04	0.02
	Roma	1.48	2.59	3.24	3.97
	Other	0.18	0.2	0.17	0.21
R8 – West	Romanian	84.42	86.27	88.23	90.20
	Magyar	7.84	6.69	5.32	4.00
	Roma	1.97	2.48	2.68	2.77
	Other	5.77	4.56	3.77	3.03

Source: RPL 2011 vol 2, Table 1 for the stable population and population by ethnicity at the 1992-2011 censuses and Table 2.2.1 at the 2021 census.

To analyse the degree of ethnic concentration of the resident population at the regional level, we calculated the entropy for each development region. The results are presented in Table 4. In five development regions (Bucharest - Ilfov, North-East, South-West Oltenia, and South-East), the degree of concentration is higher compared to the national level. In three of the regions, Romanians represent more than 95% of the total population, while in South-East the share is 94.2%. In this region, the Magyars and the Roma register a considerably lower share compared to the national average (0.03% compared to 6.05% for the Magyars; 3.14% compared to 3.44% for the Roma). However, within this region there are important communities of Turks (0.84% of the resident population of the region compared to 0.12% at national level), Russians (0.68% compared to 0.12%), and Tartars (0.82% compared to 0.11%).

The lowest share of concentration of the resident population by ethnicity is registered for the Centre, North-West and West regions. The first two regions are characterised by a high share of Magyars (28.5% of the resident population in the Centre region; 15.9% of the resident population in the North-West region) and Roma

(5.37% of the resident population in the Centre region; 4.9% of the resident population in the North-West region). In the West region, there are significant shares of resident population from various ethnic groups: Magyars - 4%; Roma - 3.77%; Ukrainians - 0.46%; Germans - 0.59%; Serbians - 0.72%; Slovaks - 0.3%; Bulgarians - 0.26% and Croatians - 0.33%.

Table 4. Entropy for the ethnic distribution of the Romanian population at the regional level, 2021 census

	Entropy value
All regions	0.202
R1 – North-East	0.321
R2 – Centre	0.357
R3 – North-East	0.069
R4 – South-East	0.131
R5 – South-Muntenia	0.084
R6 – Bucharest-Ilfov	0.065
R7 – South-West Oltenia	0.082
R8 – West	0.213

Source: Authors' calculations based on 2021 Census data.

6. Conclusions

This paper analysed ethnic diversity in Romania between 1930 and 2021 using census data. The analysis reveals massive changes in the distribution of population by ethnicity, which was caused in part by important historical events: the Second World War, the beginning of the Communist dictatorship, the Romanian Revolution in 1989 and the ascension to the European Union in 2007. The 2021 census exposes an ethnically diverse population, totally different in structure compared to 1930. This is mainly due to differences in fertility rates and migration patterns among Romania's ethnic groups.

The analysis also indicates a declining level of the entropy between 1930 and 2021, which translates into increasing levels of ethnic concentration in recent times. The analysis by region in 2021 also reveals that two of the nation's regions in particular have higher levels of entropy – North-West (0.321) and Centre (0.357), suggesting lower levels of concentration by ethnicity in these regions than in the rest of the country. It is important to recognise that the diversity (entropy) index solely gauges the extent of diversity within a population, neglecting the specific composition of racial and ethnic groups. The distinction between the magnitude and structure of diversity becomes evident when considering that a community with an equal split between Romanian and Magyar residents would yield the same diversity index score as another community where half the population is Romanian and half is Roma. This occurs despite the possible disparities in socioeconomic status, intergroup relations, and various characteristics between the two communities. To overcome this limitation, researchers should consistently complement the entropy index with ethnic group percentages or typologies that capture the structural dimension of diversity.

There are two limitations to the present study, both arising from the nature of the data. First, ethnicity was not collected for the entire population, as it was not a mandatory question during the most recent census. Second, some respondents may have misreported their ethnic groups. Misreporting ethnicity is not unusual, as people from groups perceived as undesirable often avoid such questions or answers (Dembosky et al., 2019).

Census data offers also room for further and extensive research. Taking into account additional variables such as educational attainment and labour status could offer deeper insights which can support a better understanding in the study of population, but also to design and implement better policies.

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