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Spatial Diversification of the Demographic Situation in Great Britain and Its Determinants

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Abstract:

Purpose: *The main aim of this article is the study of the assessment of the population situation and its changes in UK NUTS 2 regions in the years 2002-2018.*
Design/Methodology/Approach: *The methods of literature analysis, and descriptive statistics were used. The analysis covered such variables as total population change, natural change of population, net migration and demographic aging index.*
Findings: *To sum up, the presented analysis shows that there are positive demographic trends in economically strong agglomerations and their vicinity. This was primarily due to the intensive influx of immigrants, reinforced by their high birth rate. An unfavorable demographic situation occurred in peripheral regions, especially those strongly related to agriculture, where the population is aging rapidly. These regions will develop more and more slowly, which will result in increased regional economic polarization in Great Britain.*
Practical Implications: *The difficult demographic situation of peripheral regions will constitute another barrier to their economic development.*
Originality/Value: *The study contributes to the discussion on the spatial differentiation of the level of demographic situation in the United Kingdom.*

Keywords: *Demographic situation, regions of the United Kingdom, regional analyses*

JEL Classification: *J10, J11, J18.*

Paper type: *Research article.*

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1. Introduction

Socio-economic development, apart from education and the labor market, is determined by population processes. The increase in the population and its density leads to an increase in the demand for goods and services, determines the location of new economic enterprises, creates the possibility and the need to increase production (Heady and Hodge, 2009, pp. 221-248).

The opposite effect is caused by a decrease in population - it leads to depopulation of some places, a decrease in investment outlays, a weakening of demand for many consumer goods and services (Pociovalisteanu and Thalassinos, 2009).

As the population shrinks, it often ages. Such demographic changes mean lower budget revenues from taxes on working people, and at the same time increasing budget expenditures for the payment of pension benefits and care for the growing population of the elderly (Thalassinos *et al.*, 2019).

The importance of the effects of demographic changes in Europe is recognized by the European Commission (2020). At the same time, it points out that migration flows have a large impact on changes in the population size and its age structure. These processes are characteristic of Great Britain[2].

Their course and intensity are probably spatially differentiated. Verification of this hypothesis justifies the purpose of this study. Its purpose is to assess the demographic situation of Great Britain in the years 2002-2018 at the level of NUTS 2 statistical regions used in planning the development of regions in the EU[3].

At the same time, an attempt was made to answer the question: in which regions is the best demographic situation and in which the worst?

The study complements an earlier study on socio-economic cohesion between UK regions (Pastuszka and Pastuszka, 2022, pp. 3-18). The starting point of the study is a discussion of the most important determinants of demographic changes, and then the characteristics of individual NUTS 2 regions of Great Britain and the research methods used.

The study covered changes in the size of the population, its age structure, birth rate and migration. The results of the study are presented in static and dynamic terms.

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[2]*The correct name is United Kingdom of Great Britain and Northern Ireland. The work uses the common name of the country - Great Britain.*

[3]*The NUTs system in UK is reflected in the classification of International Territorial Levels (ITLs). There are 41 ITL 2 regions, which are part of 12 larger NUTS 1 regions and at the same time they are divided into 179 smaller NUTS 3 regions (ONS 2021a).*

2. Conditions of Demographic Changes

Demographic changes are driven by complex and mutually reinforcing causes of a cultural, economic, political and geographical nature. Even as late as the mid-20th century, households with four or more children were common in European countries, particularly in rural areas and in working-class families.

Nowadays, a typical family model to observe is the one with a single child, two being even less frequent (The ESHRE Capri Workshop Group 2010).

In demographic processes, the importance of population migration is increasing. The directions of migration determine the attractiveness of the area as a place to work and live. Migrants most often move from the least economically developed countries and regions to the most developed ones.

Migration movement is heavily influenced by military conflicts or political and religious persecution. They have been causing an influx of migrants to Europe from the Middle East, South East Asia, Africa, and, in the last several months - from Ukraine.

The inflow of migrants compensates for the low or negative birth rate, weakens the pace and scale of aging, reduces labor shortages and thus has a positive impact on the economic development prospects of a given region. There are also negative aspects of immigration: difficulties with assimilation and integration with the local population, adaptation to the labor market, especially for poorly educated people who do not know the language of the country of residence, potential increase in social tensions.

In the regions of migration outflow, the labor force is decreasing, the population is aging, spending in the social sphere is increasing, and the relationship between budgetary income and expenditure is deteriorating (Adamson 2006, pp. 165-199).

On the other hand, there are also positive, though only temporary, effects of population outflows in overpopulated, underdeveloped regions, which include, among other things, less congestion and pollution, reduced budgetary expenditure, decreased competition in the labour market and lower unemployment (Wesley and Peterson, 2017, pp. 1-15).

3. UK NUTS 2 Regions

In the UK, the NUTS 2 regions are made up of separate county groups and county groups in England (33 regions), local authority groups in Wales (2 regions) and Scotland (5 regions) and Northern Ireland as one region (Figure 1).

Figure 1. *Division of UK into NUTS2 regions*

Source: *Own elaboration based on ONS data*.

These regions differ in terms of geographic and natural conditions, size and topography, population intensity, and level of economic development. The largest area is the Highlands and Islands - the northernmost region of Scotland. Southern Scotland, Eastern Scotland, Northern Ireland, West Wales and The Valleys and East Anglia are also large regions.

A significant part of Scottish regions is occupied by mountains, and in Northern Ireland - upland and mountainous areas with poor vegetation, moorland, numerous lakes and peat bogs. The population here, particularly in the Highlands and Islands, is mostly small towns, villages and isolated farms, making it the most sparsely populated and least urbanized area in the UK. North Eastern Scotland and Cumbria, located on the border with Scotland, are also characterized by low population density.

The smallest in terms of area are: the city of London, as a separate region, five other regions of England with large industrial centers and related suburban areas: Merseyside including the Liverpool city agglomeration, West Midlands with the Birmingham city agglomeration, neighboring Greater Manchester, West Yorkshire with the city agglomeration Bradford and South Yorkshire with the Sheffield metropolitan area and West Central Scotland with the Glasgow metropolitan area. They are both the most urbanized and most densely populated regions in the UK.

London is the richest region due to the numerous international financial and insurance institutions, high-tech enterprises, the most important state authorities, and research and development centers located there.

The poorest region is West Wales and The Valleys - peripherally located and poorly connected with the rest of Great Britain. Its extremely low level of economic development is the result of an unfavorable structure of the economy with a large percentage of employment in mining and metallurgy, which is losing its economic importance, as well as in low-yielding agriculture.

Table 1. *Area and population of UK NUTS 2 regions*

Region	ITL code	Area [thous. km²]	Population [thou	Region	ITL code	Area [thous. km²]	Population [thou
Tees Valley and Durham	C1	3,02	1 206	Essex	H3	3,68	1 847
Northumberland and Tyne and Wear	C2	5,57	1 464	London	I3	1,58	8962
Cumbria	D1	6,82	500	Berkshire, Buckinghamshire and Oxfordshire	J1	5,74	2 420
Greater Manchester	D3	1,28	2 836	Surrey, East and West Sussex	J2	5,46	2 908
Lancashire	D4	3,08	1 509	Hampshire and Isle of Wight	J3	4,15	1 992
Cheshire	D6	2,26	937	Kent	J4	3,74	1 860
Merseyside	D7	0,73	1 559	Gloucestershire, Wiltshire and Bath/Bristol area	K1	7,47	2 516
East Yorkshire and Northern Lincolnshire	E1	3,52	933	Dorset and Somerset	K2	6,11	1 336
North Yorkshire	E2	8,31	829	Cornwall and Isles of Scilly	K3	3,57	572
South Yorkshire	E3	1,55	1 409	Devon	K4	6,57	1 201
West Yorkshire	E4	2,03	2 332	West Wales and The Valleys	L1	13,13	1 979
Derbyshire and Nottinghamshire	F1	4,79	2 221	East Wales	L2	7,65	1 174
Leicestershire, Rutland and Northamptonshire	F2	2,48	1 854	North Eastern Scotland	M5	6,50	490
Lincolnshire	F3	5,94	761	Highlands and Islands	M6	41,05	469
Herefordshire, Worcestershire and Warwickshire	G1	5,89	1 367	Eastern Scotland	M7	13,39	2 005

Shropshire and Staffordshire	G2	6,20	1 639	West Central Scotland	M8	1,98	1 550
West Midlands	G3	0,90	2 929	Southern Scotland	M9	15,89	948
East Anglia	H1	12,58	2 525	Northern Ireland	N0	14,34	1 894
Bedfordshire and Hertfordshire	H2	2,88	1865				

Source: *Own elaboration based on ONS data*.

4. Data and Method of Study

The aim of the study is to assess the demographic situation of the regions of Great Britain. The analysis covered 37 NUTS 2 regions, because London was considered as one urban (capital) region, without dividing it into five districts as separate NUTS 2 units.

The analysis used data for the years 2002-2018 (before the COVID-19 pandemic), published by Eurostat. The most general measures of demographic change are population size and growth. However, they do not fully reflect the complexity of demographic processes. Therefore, the study covered two other components of the actual population growth, i.e., natural change of population increase and net migration.

Their values have an impact on the aging of the population. The scale of this process is shown by the demographic aging index used in the analysis, calculated as the number of people aged 65 and over per hundred people aged 0-14. The higher the value of this indicator, the older the society, as there is more of the elderly population for a specific population of young people.

5. The Results of the Empirical Study, their Interpretation and Discussion

5.1 The State and Dynamics of the Population

The population of Great Britain in 2018 exceeded 66 million inhabitants and, compared to 2002, increased by over 7 million people, i.e., by 11.9%. Most of the inhabitants arrived in London. By over 300 thousand population has increased in the West Midlands, Gloucestershire, Wiltshire and Bath/Bristol area.

Table 2. *Regions with the largest and smallest percentage increase in the number of inhabitants in 2002-2018*

Regions with the highest population growth		Regions with the lowest population growth	
London (22,0%)	Lincolnshire (15,3%)	Cumbria (2,1%)	Merseyside (4,5%)
Leicestershire, Rutland and Northamptonshire (17,1%)	Bedfordshire and Hertfordshire (15,3%)	Southern Scotland (3,0%)	West Central Scotland (4,6%)

Kent (16,2%)	Gloucestershire, Wiltshire and Bristol/Bath area (14,7%)	Northumberland and Tyne and Wear (4,4%)	Tees Valley and Durham (4,9%)

Source: *Own elaboration based on ONS data.*

In percentage terms, apart from London, the largest increases in population occurred in Leicestershire, Rutland and Northamptonshire, Kent, Lincolnshire and Bedfordshire and Hertfordshire (ONS, 2020). The smallest number and percentage increase in population was recorded in Cumbria and neighboring Southern Scotland.

5.2 Net Migration

The increase in the population of Great Britain resulted mainly from the influx of immigrants, usually people much younger than the native population. According to the ONS (2021c), without a positive migration balance, the population of Great Britain would have been declining since 1999. Scotland and Wales in particular would be affected by depopulation processes due to the lower number of births and the higher number of deaths (Migration Observatory, 2019).

In the years 2002-2018, the total migration balance of Great Britain amounted to 4.4 million people, which accounted for almost 70 people per 1,000 inhabitants and was spatially diverse.

The largest net influx of migrants was recorded in London (382,000 people) and neighboring regions - Surrey, East and West Sussex (305,000), Kent (203,000), East Anglia (277,000) and Gloucestershire, Wiltshire and Bristol/ Bath area (235,000).

They offer migrants a wide and attractive educational offer, better access to public services, various employment opportunities, and better living conditions. Per 1,000 inhabitants, the largest number of immigrants came to Lincolnshire - a region with a lower cost of living than in London, 100 kilometers away and neighboring areas[4].

Table 3. *Regions with the highest and lowest total rate of net migration for 2002-2018*

Regions with the total highest migration rate		Regions with the total lowest migration rate	
Lincolshire (160,9‰)	Devon (120,6‰)	Northern Ireland (22,2‰)	Lancashire (33,3‰)
Cornwall and Isles of Scilly (144,5‰)	Kent (118,3‰)	Merseyside (28,3‰)	West Yorkshire (34,8‰)
Dorset and	East Anglia	Tees Valley and	Southern Scotland

[4]*In Lincolnshire, between 2006 and 2016 52.7% of population growth was due to foreign influx, mainly to the region's two largest cities: Lincoln and Boston (Flechter 2017).*

Somerset (132,3‰)	(117,8‰)	Durham (29,6‰)	(36,6‰)

Source: *Own elaboration based on ONS data.*

Most immigrants came from former British colonies, especially from Pakistan, India, Bangladesh, and since 2004 from Central and Eastern European countries, especially from Poland and since 2014 from Romania (ONS 2021c). The influx of foreigners not only increased the population, but also contributed directly to the increase in the share of young people in the population, and indirectly to the improvement of the fertility rate and birth rate.

In addition to demographic benefits, the positive impact of immigration on the situation on the labor market and the dynamics of economic activity is also indicated. According to the estimates of the National Institute of Economic and Social Research, the UK labor market gained 625,000 jobs in 2004-2009. employees from Eastern European countries.

According to experts from Oxford Economics (2018), in 2016/17, the average European economic migrant paid £2,300 more in taxes than the average UK citizen. Thanks to working immigrants, the UK's GDP in 2012 increased by an additional 0.5%[5]. Their share in the creation of London's gross added value in 2015, as estimated by PwC (2017) experts, was at the level of 22%.

According to some studies, the positive impact of migrants on economic development is ambiguous, because the beneficiaries of GDP growth are the immigrants themselves, who are recipients of social and assistance benefits, and not British citizens, and additionally they have a negative impact on the level of employment and wages of the local population[6]. This is particularly true for the lowest-paid native workers in rural areas in East, South East and South West England (Ministry of Housing, 2011).

It is indicated that in the regions of the strongest migration influx there are clear problems in integrating foreigners with the local population (The Migration Observation, 2011).

Poor knowledge of the English language and cultivating one's traditional cultural habits make it difficult for immigrants to obtain a proper education, find a job, earn an income (Understanding Newham, 2017). As a consequence, the functioning of "parallel societies" is consolidated, which can be the reason for the emergence of conflict situations (Hill, 2013, p. 96-132).

[5]*Economic Impacts of Immigration to the UK, 13 April 2016. MW235: Economic Impacts of Immigration to the UK | Migration Watch UK.*

[6]*Between 1995 and 2010, for every 100 non-EU migrants, 23 native workers lost their jobs (Migration Advisory Committee 2012).*

The highest total positive net migration per 1,000 inhabitants was recorded in Cornwall and Isles of Scilly and neighboring Dorset and Somerset, Devon. Their common feature is a large share in the economy of agriculture and tourism.

Due to the landscape and climatic qualities of these regions, middle-aged and elderly Britons prevailed among the visitors, recognizing these areas as suitable for a peaceful and healthy life. On the other hand, mostly young people emigrated, who could not find a sufficiently attractive job on the local market (Population of Cornwall, 2022).

5.3 Natural Population Change

Population growth in the UK and most regions between 2002 and 2018 was also influenced by positive natural increase. Its greatest size was recorded in London, where 154 people came for every 1,000 inhabitants. High rates of natural increase were recorded in Northern Ireland, where it was the main component of population growth[7], and in five English regions, two near London (Berkshire and Bedfordshire), two adjacent north-west (West Yorkshire and Greater Manchester) and mid-western West Midlands.

This is mainly due to the much higher fertility rate of immigrant women than women born in Great Britain (National Institute of Economic and Social Research 2019), e.g. in the London districts of Brent and Newham (Dubuc, 2012), the percentage of children born to immigrant mothers was as much as 80% (ONS 2021b).

Table 4. *Regions with the highest and lowest total net natural population change for 2002-2018*

Regions with the total highest net natural population		Regions with the total lowest net natural population	
London (154,3‰)	Northern Ireland (85,2‰)	Cornwall and Isles of Scilly (-24,7%‰)	Cumbria (-23,2‰)
Berkshire, Buckinghamshire and Oxfordshire (91,5‰)	Bedfordshire and Hertfordshire (84,7‰)	Southern Scotland (-23,9‰)	Dorset and Somerset (-22,7‰)
West Midlands (85,6‰)	West Yorkshire (72,9‰)	Highlands and Islands (-23,6% ‰)	Devon (-19,0‰)

Source: *Own elaboration based on ONS data.*

At the opposite extreme, there are nine regions with negative birth rates. Cornwall and the Isles of Scilly remain in the most difficult situation, where statistically 24.7 people died per thousand inhabitants. A slightly smaller natural loss was recorded in: Southern Scotland, Highlands and Islands, Cumbria, Dorset and Somerset.

[7]*Between 2004 and 2017, 80% of Northern Ireland's population growth was due to positive natural increase (Northern Ireland Assembly 2019).*

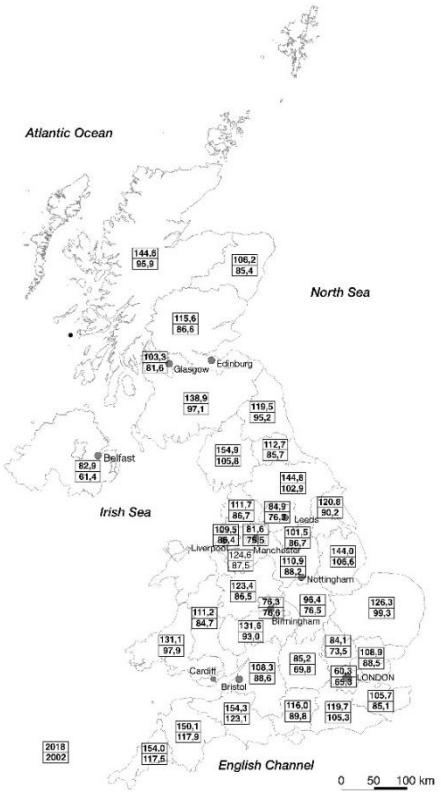
More deaths than births were also recorded in Devon, Lincolnshire, West Wales and The Valleys and North Yorkshire. These regions are struggling with the migration outflow of young people entering childbearing age.

The consequence of this is the systematic deterioration of the demographic structure of the inhabitants, the depletion of the number of people, especially women, in the age group capable of procreation, and what is connected with it - a decrease in the number of births, even with a fertility rate similar to other regions.

5.4 Demographic Ageing

The consequence of the described demographic trends in most regions is the aging of the population, the scale of which is reflected in the demographic aging index. Its value in 2018 was the highest (over 150) in regions with a very large negative birth rate: Cumbria, Dorset and Somerset, Cornwall and Isles of Scilly, Devon, and compared to 2002 it achieved the highest dynamics (Figure 2).

Figure 2. *Aging rates in regions NUTS 2 in 2002 and 2018*



Source: *Own elaboration based on ONS data.*

A high percentage of older people in relation to the youngest age groups and its above-average growth rate was also recorded, as in other European countries (Eurostat, 2022), in other rural regions: the Highlands and Islands and North Yorkshire in the north of England and Lincolnshire - in the east.

As a result, the resources of the labor force and the products of its labor will noticeably decrease, the demand for many products and services will decrease, which may lead to a shrinking economic potential, an increase in the cost of social security and other social problems.

The situation in London is clearly the most favorable in this respect, where in the years 2002-2018 the value of the old age coefficient decreased from 65.3 to 60.3. Smaller than the national average burden on the group of people under the age of 15 with a group of people aged over 64 also saw strong influxes in eight regions: West Midlands, Greater Manchester, Northern Ireland, Bedfordshire and Hertfordshire, Berkshire, Buckinghamshire and Oxfordshire, West Yorkshire and South Yorkshire.

6. Conclusions

The obtained research results justify the formulation the most important conclusions.

1. In the years 2002-2018, the demographic potential in the south-eastern part of Great Britain was strengthened. The growth leader was London and its neighboring regions: Bedfordshire and Hertfordshire, Berkshire, Buckinghamshire and Oxfordshire, Kent. The share of inhabitants of this area in the UK population increased from 22.6% to 23.8%. This increase was the result of an intensive influx of immigrants, mainly from Asia and Africa, reinforced by their high birth rate. For this reason, the population aging processes are the least advanced there, especially in London.

2. A large population potential (18.0% of the UK population) is found in the next five highly urbanized regions located in different parts of England: West Midlands, Greater Manchester, West Yorkshire, South Yorkshire and Gloucestershire, Wiltshire and Bristol/Bath area. These areas, in particular the large cities and their suburbs located there, as well as the London agglomeration, in addition to a high influx of migrants, recorded an above-average birth rate. This ensured an increase in the population and its clearly more favorable age structure than the national average.

3. Positive demographic trends were also noted in Northern Ireland, where, unlike the above-mentioned agglomeration areas, the increase in population size and its low dynamics of the aging process were primarily influenced by high birth rate, and then by positive migration balance.

4. Unfavorable changes in the demographic situation were recorded in the regions in the north of the UK. Their specificity is their remote location in relation to larger urban centres, insufficient communication accessibility and a large share of agriculture and tourism in the economy. All these regions, despite a very high negative birth rate, recorded an increase in the number of inhabitants due to a large migration influx. However, among the immigrant population, elderly people were predominant, looking for areas attractive in nature, conducive to a peaceful and healthy life. On the other hand, young people emigrated from there in search of attractive job offers. This hinders the renewal of generations in these regions and determines the highest rate and level of population aging in the country.

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