CITIES IN EUROPE AND CENTRAL ASIA

UNITED KINGDOM

METHODOLOGY

This country snapshot was produced as part of an Advisory Services and Analytics (ASA) work developed by the Urban, Social, Rural and Resilient Global Practice (GPSURR). The objective of this ASA is to analyze economic, spatial and demographic trends in the urban systems of countries in Europe and Central Asia. City-level population data was obtained from the National Statistics Institute. In the absence of city-level economic and spatial data over the period of analysis, nighttime light (NLs) satellite imaging was used to assess spatial and demographic trends in cities. In previous studies, NLs intensity has been found to be positively correlated with levels of economic activity as measured by GDP. Regional-level regressions of NLs and GDP were conducted to assess the validity of using NLs as a proxy for economic activity in the United Kingdom (UK). The results suggest a significant and positive correlation between NLs intensity and GDP. In the UK, GDP to NLS elasticity was found to be 0.51 *(an increase in light intensity of 1 percent is associated with a 0.51 percent increase in GDP)*. This country snapshot presents its results at the city level. Due to measurement error, city-level economic and spatial results should be analyzed with caution; and when possible, additional city level data *(i.e. satellite imagery, firm-level data, and etc.)* should be consulted to corroborate results. This snapshot classified 535 settlements in the UK as cities. Demographic trends are available for all 535 cities but NLs analysis is only available for 520 cities; the remaining settlements did not produce enough light to be considered “urban” by the NLs threshold employed in this analysis. Similar assessments done for other countries suggest that NLs are able to capture most settlements with 30,000 inhabitants or more. For additional information on this ASA please contact Paula Restrepo Cadavid (prestrepocadavid@worldbank.org) or Sofia Zhukova (szhukova@worldbank.org)

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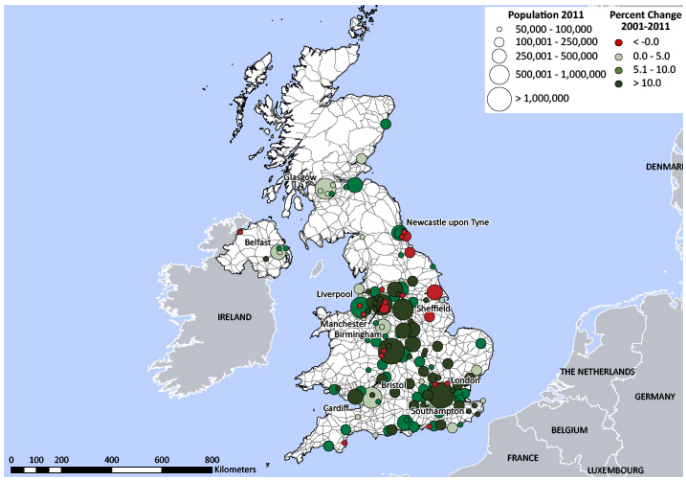
DEMOGRAPHICS

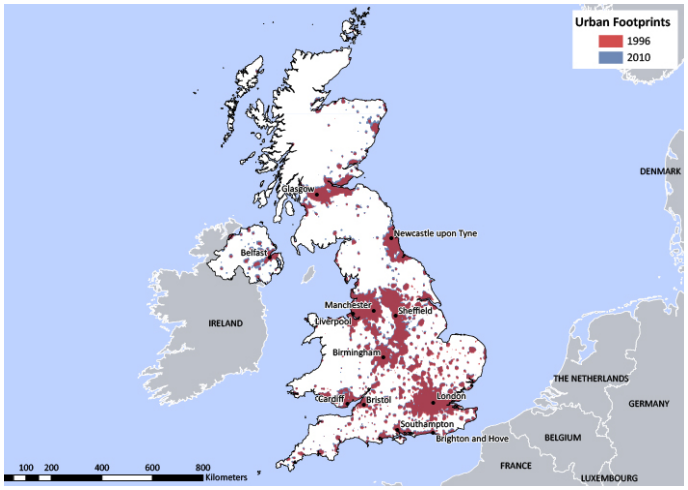
		BEFORE	RECENTLY
Fertility Rates	UK	1.63[1]	1.91[2]
	ECA	1.56[1]	1.70[2]
Life Expectancy	UK	77.99[1]	80.95[2]
	ECA	73.50[1]	76.36[2]
% of Population Above Age 65	UK	15.86[1]	16.43[2]
	ECA	14.07[1]	14.81[2]
Population Growth (Average Annual %)	UK	0.65[3]	
	ECA	0.35[3]	
Urban Population Growth (Average Annual %)	UK	0.98[3]	
	ECA	0.60[3]	
Urbanization Level (%)	UK	78.75[1]	68.78[2]
	ECA	81.57[1]	70.15[2]
Annual Urbanization Rate (%)	UK	0.33[3]	
	ECA	0.24[3]	
City Average Population	UK	74,903[1]	80,792[2]
	ECA	61,105[1]	64,914[2]
% Cities With More Than 100,000	UK	13.64[1]	14.95[2]
	ECA	10.41[1]	10.57[2]
% Cities With More Than 500,000	UK	0.93[1]	1.31[2]
	ECA	1.56[1]	1.83[2]
% Cities losing Population	UK	14.95[3]	
	ECA	61.07[3]	



SPATIAL

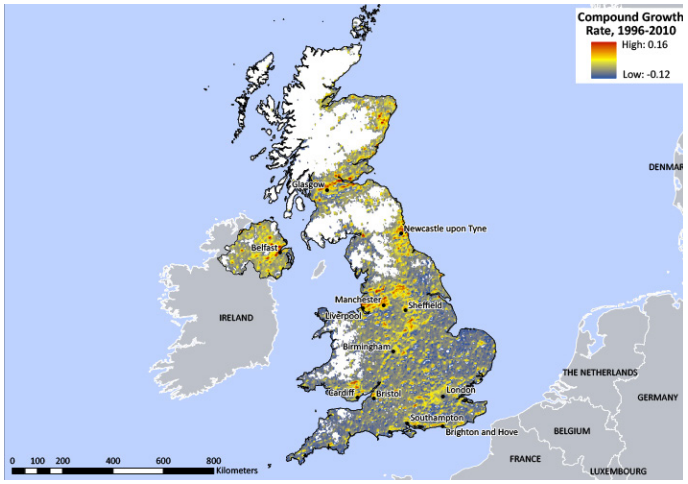
		BEFORE	RECENTLY
Built Up Area (100,000km²)	UK	11,837[4]	14,221[5]
	ECA	213,244[4]	288,046[5]
Built Up m² Per Capita	UK	200.99	221.87
	ECA	247.39	320.89
Built Up Area Growth (%)	UK	20.14[7]	
	ECA	35.07[7]	
Built Up m² Per Capita Growth (%)	UK	10.39[7]	
	ECA	29.54[7]	
Number of Cities in Analysis	UK	535[3]	
	ECA	5,549[3]	
Number of Identified Cities (NLS)	UK	520[8]	
	ECA	3,687[8]	
Number of Growing Cities (NLS Area)	UK	113[8]	
	ECA	1,804[8]	
Number of Agglomerations(NLS)	UK	30[8]	
	ECA	352[8]	

This section uses data from the Global Human Settlement layer (GHSL) developed by the Joint Research Centre of the European Commission. The GHSL extracts geospatial imagery to map and report on human settlements and urbanization.



ECONOMICS

		BEFORE	RECENTLY
Average Annual GDP growth (%)	UK	1.65[3]	
	ECA	1.75[3]	
Average Annual GDP per capital growth (%)	UK	1.08[3]	
	ECA	1.38[3]	
Estimated contribution of urban GVA to GDP growth (%)	UK	94.63[9]	
	ECA	—	
Unemployment Rate (%)	UK	7.80[5]	
	ECA	9.60[5]	
Poverty rate (% at national poverty line)	UK	—	
	ECA	—	
Urban to rural GVA ratio	UK	37.59[11]	
	ECA	—	
Urban NLS Intensity Growth (%, annual average)	UK	3.19[8]	
	ECA	6.92[8]	
% City Economies Growing (in NLS intensity)	UK	85.60[8]	
	ECA	95.92[8]	
GDP to NLS Elasticity	UK	0.51[12]	
	ECA	0.37[12]	

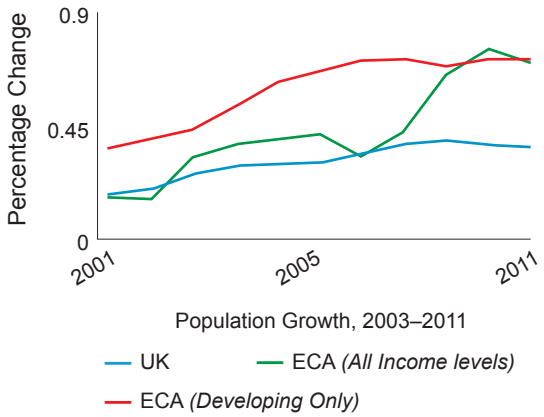


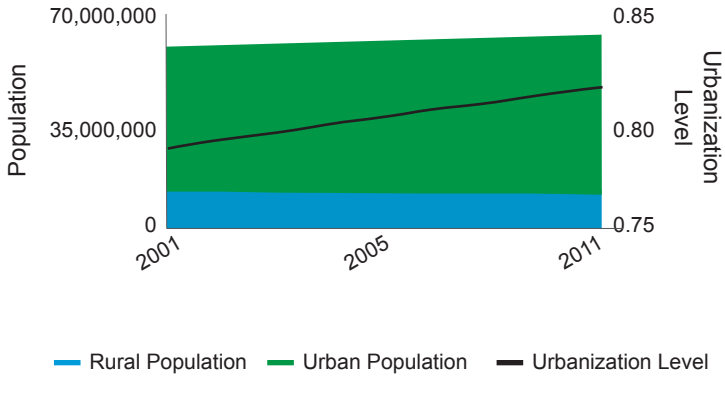
[1] 2001, [2] 2011, [3] 2001–2011, [4] 2000, [5] 2013, [6] 1990, [7] 2000–2013, [8] 2000–2010, [9] 2003–2008, [10] 2012, [11] 2005, [12] 1996–2010.

URBANIZATION TRENDS

The UK's population is growing. Between 2001 and 2011 the UK's population grew a total of 7.00 percent, averaging a growth of 0.65 percent per year. During the same period, ECA had an annual average population growth rate of 0.27 percent. In addition to population growth, the UK is also showing positive trends in other demographic indicators: both fertility rates and life expectancy are also increasing. As a result of this growth, only 14.95 percent of the UK's cities are declining in population, this low level of population decline is unlike what is observed in other countries in the region.

The UK is highly urbanized and continues to urbanize. In 2001 the UK's urbanization level was 78.75 percent and this increased by an annual average of 0.33 percent to 81.57 percent in 2011. The UK's level of urbanization is higher than what is observed in other countries in the region. Between 2001 and 2011 the urban population grew by 10.83 percent. The rural population, which is around four times smaller than the urban population, declined by 7.19 percent between 2001 and 2011.



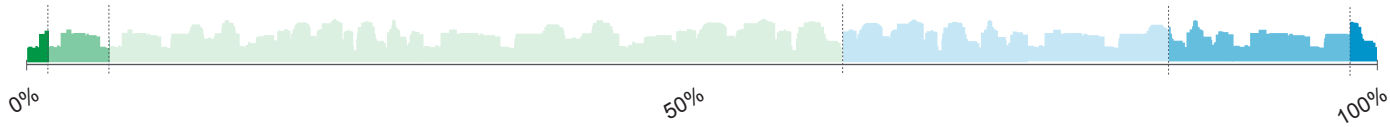


DEMOGRAPHICS OF THE URBAN SYSTEM

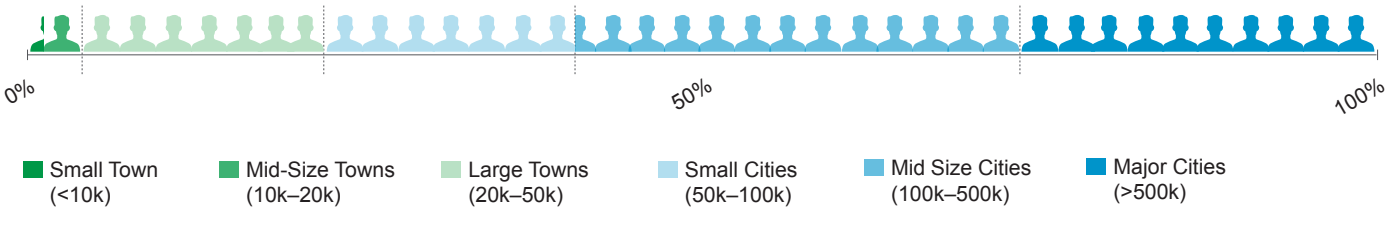
Most of the UK's population is concentrated in cities with more than 100 thousand inhabitants. In 2011 59.43 percent of the UK's urban system comprised of cities with between 20 and 50 thousands inhabitants. Despite this, 56.29 percent of the population lived in cities with more than 100 thousand inhabitants *(these cities constitute only 14.94 percent of the UK's urban system)*. Cities with more than 500 thousand inhabitants underwent the highest rates of population growth, growing 9.27 percent between 2001 and 2011. Despite the concentration of population growth in large cities, the 15 fastest growing cities in the UK have an average population of 40 thousand inhabitants.

Population growth is uneven within the UK's agglomerations. The nighttime lights threshold used in this analysis identifies 30 agglomerations in the UK. 13 of the 15 fastest growing cities in the UK belong to an agglomeration and have had substantive increases in population between 2001 and 2011 *(please see table below)*. There are two dynamics that can be observed within the UK's agglomerations. Most agglomerations like London, are growing at higher rates in the core than in the surrounding cities. This dynamic is suggestive of densification in the core of the agglomeration. In contrast, a few agglomerations, like Glasgow and Belfast, have experienced lower population growth in the core, when compared to its surrounding cities, which is suggestive of suburbanization in some of the UK's agglomerations.

DISTRIBUTION OF CITIES BY CITY SIZE: **2011**



URBAN POPULATION DISTRIBUTION BY CITY SIZE: **2011**



LARGEST CITIES BY POPULATION

CITY	POPULATION 2011	% CHANGE 2001–2011
London	8,250,205	14.45
Birmingham	1,085,810	11.84
Glasgow	590,507	2.67
Liverpool	552,267	5.44
Bristol	535,907	3.66
Sheffield	518,090	10.44
Manchester	510,746	16.41
Leeds	474,632	6.47
Edinburgh	459,366	6.48
Leicester	443,760	10.54
Bradford	349,561	12.35
Cardiff	335,145	12.92
Coventry	325,949	6.57
Nottingham	289,301	15.91
Kingston Upon Hul	284,321	-5.67

LARGEST URBAN AGGLOMERATIONS*

AGGLOMERATION MAIN CITY	POPULATION 2011	% CHANGE 2001–2011	CITY COUNT
London	12,700,000	11.83	81
Glasgow	2,252,431	3.85	37
Newcastle upon Tyne	1,814,177	3.36	29
Cardiff	1,172,760	6.34	17
Southampton	891,944	7.41	12
Belfast	623,945	3.83	8
Brighton and Hove	514,175	6.88	7
Bristol	788,871	5.20	7
Bournemouth	442,959	8.88	5
Northampton	404,955	9.51	5
Grimsby	207,725	3.80	3
Milton Keynes	296,454	23.88	3
Oxford	225,176	10.24	3
Paignton	139,060	1.8	3

* The nighttime lights threshold used in this analysis identifies Birmingham as a corridor of cities.

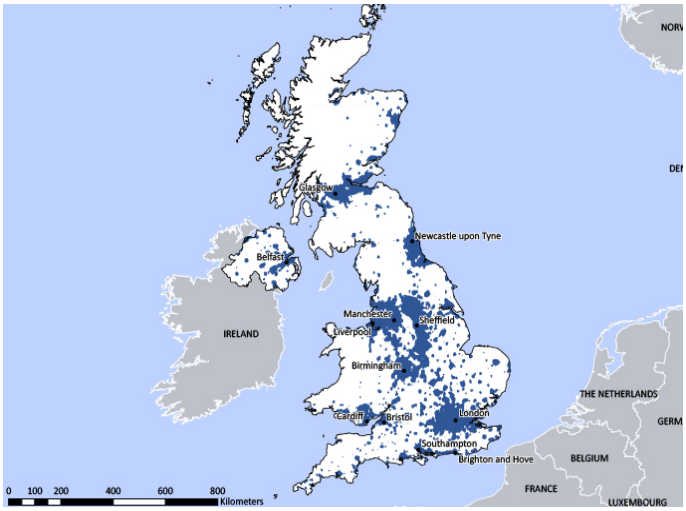
FASTEST GROWING CITIES

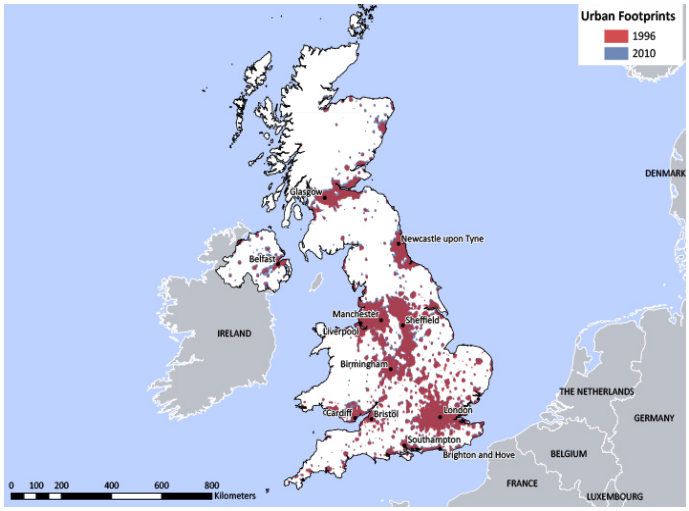
CITY	POPULATION 2011	% CHANGE 2003–2011	BELONGS TO AN AGGLOMERATION	AGGLOMERATION
Ingleby Barwick	20,378	42.60	Yes	Newcastle upon Tyne
Milton Keynes	171,750	40.73	Yes	Milton Keynes
Portishead	23,699	38.35	Yes	Bristol
Bathgate	20,363	31.66	Yes	Glasgow
Swanscombe	19,835	28.89	Yes	London
Straford-upon-Avon	27,830	25.43	No	N/A
Haverhill	27,041	22.86	No	N/A
Cambuslang	27,004	22.39	Yes	Glasgow
Spalding	31,588	21.90	No	N/A
Canterbury	54,880	21.81	Yes	Canterbury
Warwick	31,345	20.42	Yes	Birmingham
Consett	24,828	20.18	Yes	Newcastle upon Tyme
Hoddesdon	42,253	19.92	Yes	London
Epsom	31,474	19.86	Yes	London
Dunfermline	49,706	19.74	Yes	Glasgow

SPATIAL TRENDS OF THE URBAN SYSTEM

The majority of the UK's cities are increasing in area. Between 2000 and 2010 the average area change for the UK's identified cities was 52.19 percent with a standard deviation of 57.60. This standard deviation, which is lower than observed in other countries in the region, suggest a very narrow range in the growth and decline of city footprints in the UK. Of the 125 identified cities, only 12 had footprints that contracted in size according to the nighttime lights threshold used in this analysis. Gainsborough, Newry and Elgin are the cities that underwent the largest increases in urban footprint while March Dumfries and St. Austell underwent the largest decreases in urban footprint. The three largest cities London, Birmingham and Glasgow had modest changes averaging an increase of 27.66 percent in urban footprint between 2000 and 2010. Changes in built-up area in the UK, which were smaller than ECA's average change in built-up area, confirm the modest changes in urban footprint identified by the nighttime lights threshold used in this analysis.

Note: Night-Lights are used to define urban footprints and follow their change over time. A urban threshold *(above which a certain pixel is considered urban)* is estimated for each country and used to delimit cities' footprints. Agglomerations—as defined by NLS—are composed of cities whose NLS footprint merges. Single cities are cities who do not belong to any agglomeration.



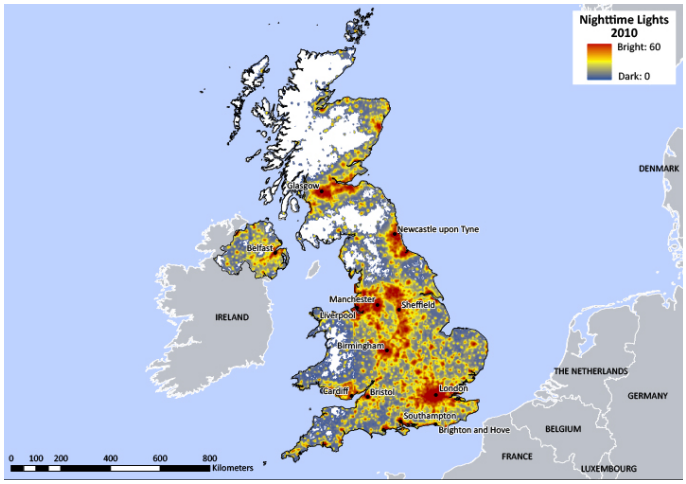


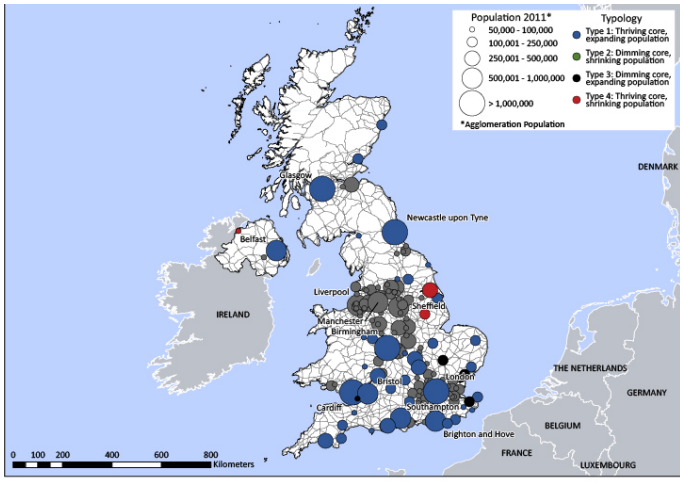
ECONOMICS OF THE URBAN SYSTEM

The urban sector is a key driver of economic growth in the UK. Between 2001 and 2005 the urban sector accounted for an estimated 94.63 percent of growth in the UK's gross value added which is similar to trends observed in other countries in the region. However, the urban to rural gross value added in 2005 was 37.59 while the urban to rural population ratio was 4.42, which suggest that urban areas are more productive than rural areas. The difference in the productivity of urban areas to rural areas is greater than what is observed in other countries in the region.

The UK's cities are growing in economic activity. Nighttime lights are used as a proxy for economic activity in this analysis (please refer to methodology on page 1). According to the nighttime lights threshold used in this analysis, 85.60 percent of cities in the UK grew in economic activity between 2000 and 2010.

Note: Night-light intensity is being used as a proxy for economic activity at the city-level. For more information on the methodology please refer to page 1 of this snapshot. Gross value added (GVA) data by sector, as reported by the United Nations Statistics Bureau, is used to measure urban and rural production as a part of total production. The sectors were divided into those that are urban and those that are rural using the International Standard Industrial Classification of all economic activities (ISIC) , rev. 3. *Change in nighttime lights is measured by the change in total brightness for the urban extent between 2000 and 2010.





CITY TYPOLOGIES

Two city typologies were created based on nighttime lights *(see below)*. These typologies are intended to shed light on economic and demographic trends in the UK's urban system. **Typology 1** divides cities based on whether they emit enough light to be considered as urban in 2000 and in 2010. In the UK, 97.19 percent of the cities emitted enough light to be considered urban in both periods and the remaining 2.81 percent were not considered urban in both periods *(not identified)*.

Typology 2 classifies identified cities into four types based on their nighttime light trends *(thriving or dimming)*, which are used as a proxy for growing or declining levels of economic activity, and population trends *(growing or declining)* *(please see page 3 for map of typology 2 cities)*. In the UK, 55.20 percent of the identified cities have a growing population and growing economic activity *(type 1)*. Type 1 cities include London, Birmingham and Glasgow. 4.80 percent of identified cities have a declining population and declining economic activity *(type 2)*. Type 2 cities include Braintree, Colwyn Bay and Rhyl. 32.80 percent of cities have a growing population and declining economic activity *(type 3)*. Type 3 cities include Cambridge, Colchester and Weston- super-Mare. 53.77 percent of cities have a declining population and growing economic activity *(type 4)*. Type 4 cities include Kingston upon Hull, Lincoln and Derry.

Note: **TYPOLOGY 1:** Divides cities into types depending on whether they satisfy a minimum level of light brightness that is pre-defined for the settlement to be considered urban. IDENTIFIED indicates cities that have night-lights data for both periods used in this analysis (2000 and 2010); EMERGING indicates cities that only have night-lights data for the second period; SUBMERGING indicate cities that only have night-lights data for the first period; NOT IDENTIFIED indicates cities that do not have night-lights data for either period. **TYPOLOGY 2.** Divides the IDENTIFIED cities into types according to whether they have positive or negative growth in population and NLs brightness. Growth is calculated between 2000 and 2010.

TYPOLOGY 1

TYPOLOGY 1	DESCRIPTION	NUMBER	PERCENTAGE
Identified	City emits enough light in both 2000 & 2010	529	97.20
Emerging	City emits enough light only in 2010	0	0.00
Submerging	City emits enough light only in 2000	0	0.00
Non-Identified	City does not emit enough light in both 2000 & 2010	15	2.80

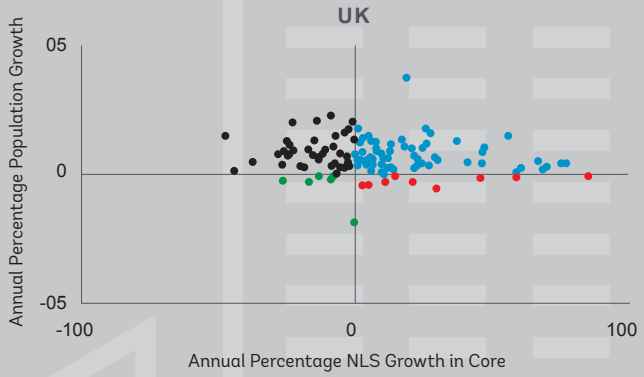
TYPOLOGY 2

TYPOLOGY 2	DESCRIPTION	NUMBER	PERCENTAGE
Type 1 (Blue)	Growing population & growing economic activity **(thriving core)**	69	55.20
Type 2 (Green)	Declining population & declining economic activity **(dimming core)**	6	4.80
Type 3 (Black)	Growing population & declining economic activity **(thriving core)**	41	32.80
Type 4 (Red)	Declining population & growing economic activity **(dimming core)**	9	7.20

	TYPE 1: Growing Population & Growing Economic Activity	**TYPE 2:** Declining Population & Declining Economic Activity	**TYPE 3:** Growing Population & Declining Economic Activity	**TYPE 4:** Declining Population & Growing Economic Activity
Population 2011 (000s)	**584.06** (222.18)	22.07 (13.74)	**37.92** (28.98)	**73.14** (95.98)
Average Annual Population Growth (% 2001–2011)	**0.77** (0.46)	-0.46 (0.74)	**1.00** (0.62)	**-0.19** (0.16)
Total NLS Value in 2010 (000s)	**128.3** (476.37)	4.31 (2.63)	**4.00** (3.40)	**19.26** (22.47)
NLS per Capita (2010)	**0.20** (0.13	0.21 (0.08)	**0.11** (0.07)	**0.82** (1.64)
NLS Growth (% 2000–2010)	**36.96** (41.45)	34.21 (35.55)	**20.18** (22.68)	**45.02** (36.21)
Examples of Cities	**London, Birmingham, Glasgow**	**Braintree, Colwyn Bay, Rhyl**	**Cambridge, Colchester, Weston-super-Mare**	**Kingston upon Hull, Lincoln, Derry**

A spatial component added to **Typology 2** classification provides insight on the interaction between spatial, economic and demo graphic trends across the UK's urban system. Adding this spatial elements revels unusual patterns in the growth and decline of the UK's urban footprints. **Type 4 cities** *(growing in economic activity and declining in population)* have undergone the greatest amount of spatial growth according to the nighttime lights threshold used in this analysis. Despite this, only one **Type 1** city *(growing in population and economic activity)* underwent negative population growth.

POPULATION AND ECONOMIC DYNAMICS*

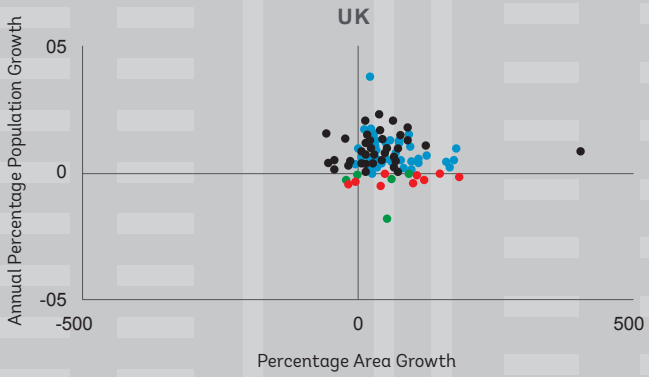


* Econ growth in NLS growth 2000–2010.
Population growth in annual avg. 2001–2011.

SPATIAL AND ECONOMIC DYNAMICS*

* Area growth in NLS footprint growth; Econ growth in NLS growth 2000–2010.

POPULATION AND SPATIAL DYNAMICS*



* Area growth is NLS footprint growth;
Population growth in annual avg. 2001–2011.

Type 1: Growing population, growing economic activity

Type 2: Declining population, declining economic activity

Type 3: Growing population, declining economic activity

Type 4: Declining population, growing economic activity

CONCLUSIONS

The UK's population has grown at rates higher than observed in other countries in ECA between 2001 and 2011. Additional demographic indicators including fertility rates, which are also increasing, suggest that the UK's population will continue to grow. The UK, which has had historically high levels of urbanization *(when compared to other countries in the region)*, also continues to urbanize. Conversely, rural areas, which comprise of a small share of the UK's total population continue to lose population.

The fastest growing cities in the country are primarily settlements with less than 50 thousand inhabitants. Agglomerations also play a role in absorbing urban population growth; with 12 of the 15 fastest growing cities in the country belonging to one. Most agglomerations like London, are growing at higher rates in the core than in the surrounding cities. This dynamic is suggestive of densification in the core of the agglomeration. In contrast, a few agglomerations, like Glasgow and Belfast, have experienced lower population growth in the core, when compared to its surrounding cities, which is suggestive of suburbanization in some of the UK's agglomerations

Unlike other countries in the region, the magnitude of growth in the urban footprints of the UK's cities is relatively small. Beyond spatial patterns, there are two dominating trends in UK's urban system: around half of the cities *(identified)* growing both in population and economic activity **(Type 1)** while a third of its cities are declining in economic activity despite growing in population **(Type 3)**. These trends are suggesting that not all cities are benefiting or contributing to the overall observed economic growth.

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