

Cathie Marsh Centre for Census and Survey Research

Population forecasts for Stoke-on-Trent UA, with an ethnic group dimension

CCSR Working Paper 2005-01

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This report was commissioned by CSR Partnership Ltd from the Cathie Marsh Centre for Census and Survey Research (CCSR), University of Manchester, as part of its work for Renew North Staffordshire, the Housing Market Renewal Pathfinder for North Staffordshire. CCSR will also provide forecasts of the number of households in Stoke, disaggregated by ethnic group.

The forecast has been completed for five ethnic group categories – White, Black, Indian, Pakistani/Bangladeshi (combined in one group) and Other, and extends to 2028. Because the trends for smaller groups and in the more distant future are less predictable, this report focuses on the change up to 2021, for Stoke as a whole and the two largest groups, White and Pakistani/Bangladeshi.

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Preface

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The Census data which have been used extensively and is reported in some sections, are Crown copyright. Some have been accessed directly from the Office for National Statistics, and others via the academic service provided by the JISC/ESRC Census Initiative.

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The results of the population forecast are also provided on Excel files in full detail together with interrogation software. A separate technical report provides detailed evidence from the 1991 and 2001 Censuses, describes how it was incorporated in the forecasts presented here, and how to use the Excel files provided both to explore the results further and to develop the forecasts with further data and alternative assumptions.

This report: “Population forecasts for Stoke CCSR Report.doc”
Technical report: “Population forecasts for Stoke CCSR Tech.doc”

Executive Summary

Ethnic group has been recorded in the national census twice, in 1991 and 2001. By monitoring change in fertility, migration and the total population in the 1990s, it has been possible to project forward the population of Stoke with an ethnic group dimension.

The work is based on careful analysis of past trends and the most likely future scenarios and is therefore labelled a forecast. Some of the future changes are clear and reliable, a result of lower fertility and the current age structure, for example. Future migration however is not so predictable because it is dependent partly on government policy and future economic trends. Thus the results of the forecast should not be taken as a precise picture of the future.

The main implications for Stoke's population and services are as follows:

- Stoke's small population decline will continue to be accompanied by greater ethnic diversity, in the context of a large majority White population.
- Between 2005 and 2021 the population of Pakistani or Bangladeshi family origins is likely to grow by four thousand to reach eleven thousand, and other minority backgrounds by three thousand to reach nine thousand, so that together 9% of Stoke's population will have ethnic origins other than White.
- The White population decrease is about 1,000 each year, or a net reduction of about 5% in a decade. This level of out-migration is similar to other city districts, irrespective of the ethnic composition of the population.
- The drop in number of school age children is expected to slow during this decade, to less than 200 annually during the next fifteen years. The school age population will then be about 25-27 thousand aged 5-15.
- This stability will be due to a growth in the number and proportion of children from populations other than White, principally of Pakistani and Bangladeshi origins, which will make up around 9% of children by 2021.
- The number of pensionable age of Pakistani and Bangladeshi origin is likely to increase from around 250 at present to around 600 in 2021. The impact on services depends on how the care of the elderly is balanced within and outside the family.

Further detail of the forecast are given in a main report, an accompanying technical report, and spreadsheet files.

Population change: total and age groups

The population forecast for Stoke on Trent as a whole is a continuation of the decrease in the 1990s. This is not unusual for cities in Britain as a result of the past forty years of ‘counter-urbanisation’, the migration to suburban and semi-rural localities and commuting to city employment. Some decrease in population is expected in all age groups except the elderly.

- The drop in number of school age children is expected to slow during this decade, to less than 200 annually during the next fifteen years, reaching 25-27 thousand aged 5-15.
- The working age population will continue to decrease.
- The very elderly population aged 85 and over is likely to increase steadily, exceeding five thousand from about 2011. The current increase in the ‘young elderly’ (up to age 74) will also result in an increase in numbers at older ages towards the end of the next decade. The changes will impact in particular on health and caring services.

YEAR	0-4	5-10	11-15	16-17	18 - retired	retired - 74	75-84	85+	Total
1991	17,900	19,050	13,550	5,750	146,550	30,900	12,750	2,950	249,400
1996	15,550	20,250	15,350	5,900	143,750	28,850	13,500	4,000	247,150
2001	13,850	17,900	16,150	6,100	141,500	26,500	14,300	4,150	240,400
2006	13,050	15,950	14,450	6,850	139,950	26,350	13,950	4,450	235,000
2011	12,450	14,950	12,900	5,700	137,300	29,250	13,350	4,950	230,800
2016	12,300	14,250	12,050	5,200	132,350	31,850	13,650	5,200	226,800
2021	12,150	14,100	11,450	5,000	126,550	32,700	15,600	5,550	223,100

These changes in age structure are due to a combination of factors including the expected end to a fall in fertility; an improvement in mortality; the growing Asian population which currently has a relatively young age structure but has a growing number reaching retirement age.

Population change: ethnic group

While the population of Stoke as a whole is expected to decrease, the population of ethnic minority groups is expected to increase¹. The Pakistani and Bangladeshi populations are expected to number 11,400 by 2021, and to form 5% of Stoke's population, compared to 3% at the time of the 2001 census.

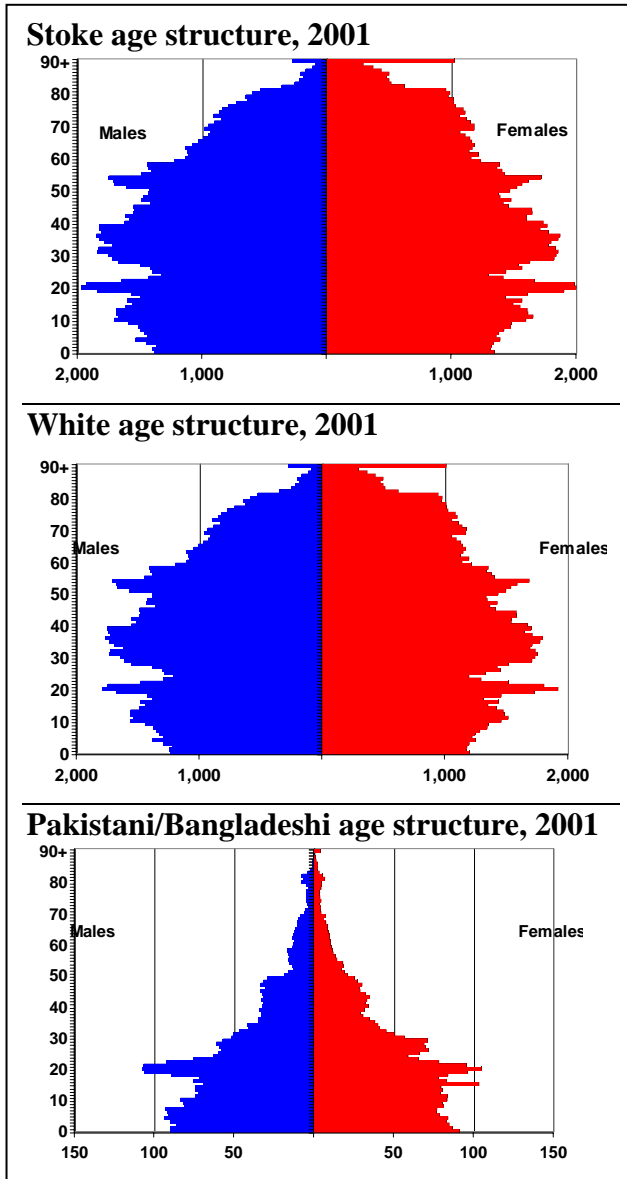
- The White population decrease is about 1,000 each year, or a net reduction of about 5% in a decade. This level of out-migration from a city district is similar to other city districts, irrespective of the ethnic composition of the population.
- The population of Pakistani or Bangladeshi family origins is likely to grow by four thousand to eleven thousand and other minority backgrounds by three thousand, so that together 9% of Stoke's population will have ethnic origins other than White.
- The increase in the ethnic minority populations as a whole is around 4-500 each year. The influences of fertility and migration are discussed below, but the growth is mainly due to a young age structure, such that there are relatively few deaths.

	Stoke	White	Black	Indian	Pakistani/ Bangladeshi	Other
1991	249,400	240,700	1,650	950	4,800	1,350
1996	247,150	236,750	1,650	1,100	5,950	1,650
2001	240,400	227,900	1,100	1,100	6,900	3,400
2006	235,000	220,800	1,000	1,100	8,000	4,100
2011	230,800	214,700	950	1,150	9,050	4,950
2016	226,800	208,550	900	1,200	10,200	5,950
2021	223,100	202,550	850	1,200	11,400	7,150

	Stoke	White	Black	Indian	Pakistani/ Bangladeshi	Other
1991	100%	97%	1%	0%	2%	1%
1996	100%	96%	1%	0%	2%	1%
2001	100%	95%	0%	0%	3%	1%
2006	100%	94%	0%	0%	3%	2%
2011	100%	93%	0%	0%	4%	2%
2016	100%	92%	0%	1%	5%	3%
2021	100%	91%	0%	1%	5%	3%

¹ The forecast has used five ethnic group categories which were recorded in both the 1991 and 2001 censuses. The classification changed, including Mixed categories in 2001, which cannot be matched to categories used in 1991. They have been allocated to the 'Other' category for this work, but one result is to reduce the number in the Black category and increase the number in the Other category at 2001. The population of small groups is in any case less predictable. The Bangladeshi group has just 572 recorded in the 2001 Census and is therefore combined with the Pakistani group for this analysis. The report focuses on the two largest groups, White and the combined Pakistani and Bangladeshi group.

Population: age and ethnic group



The charts contrast the age structure in 2001 of Stoke and the two main identified ethnic minority groups, White and Pakistani/Bangladeshi.

The Pakistani/Bangladeshi group has a relatively very young population. Its population in each age under 30 is about double that of the population in its 40s and 50s.

This is typical of a population with origins in immigration in the past generation, since those immigrants who stay often have families but are young themselves, few having reached retirement age even when their own children become adults.

The Pakistani/Bangladeshi age structure will become less pyramid-shaped, for two reasons. First, the immigrants and their children will over time fill out the older ages. Second, the fertility of the second generation is much lower than that of the first.

The table below shows the forecast for young and old in the main groups.

- The number of children, aged under 16, of Pakistani and Bangladeshi origin is expected to increase to 9% by 2021, and the number of all ethnic minority children to 17%.
- The ethnic composition of children can be taken as an indication of the longer-term future for Stoke as a whole. It suggests a very significantly diverse population, but the White population maintains a great majority of the total, more than five in every sixth person.
- The number of elderly of Pakistani and Bangladeshi origin is likely to increase from around 250 at present to around 600 in 2021. The impact on services depends on how the care of the elderly is balanced within and outside the family. This in turn may be influenced by the labour market and the involvement of men and women in it. Government policy is to encourage greater economic activity of women, which is currently relatively very low among Pakistani and Bangladeshi women with children.

Ethnic composition at each age

		1991	1996	2001	2006	2011	2016	2021
0-15	Stoke on Trent UA	50,500	51,150	47,850	43,450	40,250	38,600	37,700
	White	46,900	47,100	43,400	38,700	35,100	32,850	31,300
	Pakistani/Bangladeshi	2,300	2,550	2,650	2,850	3,000	3,200	3,350
65+	Stoke on Trent UA	39,650	40,200	39,100	38,200	40,100	44,000	46,300
	White	39,500	39,950	38,600	37,600	39,350	43,100	45,100
	Pakistani/Bangladeshi	50	100	250	250	350	400	600
0-15	Stoke on Trent UA	100%	100%	100%	100%	100%	100%	100%
	White	93%	92%	91%	89%	87%	85%	83%
	Pakistani/Bangladeshi	5%	5%	6%	7%	7%	8%	9%
65+	Stoke on Trent UA	100%	100%	100%	100%	100%	100%	100%
	White	100%	99%	99%	98%	98%	98%	97%
	Pakistani/Bangladeshi	0%	0%	1%	1%	1%	1%	1%

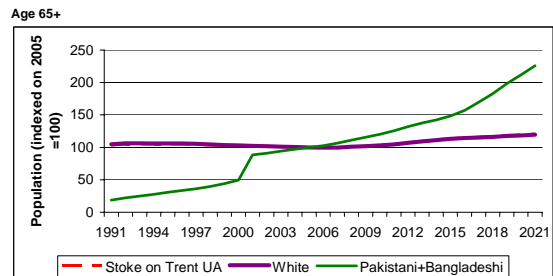
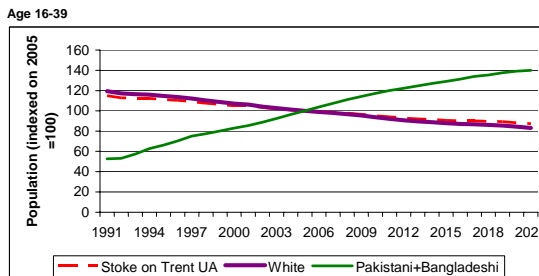
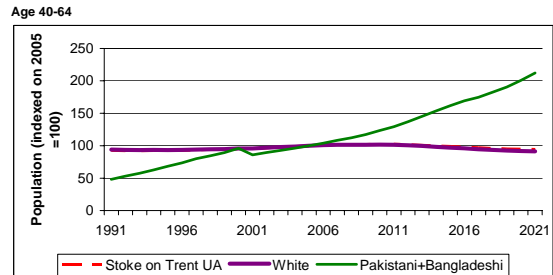
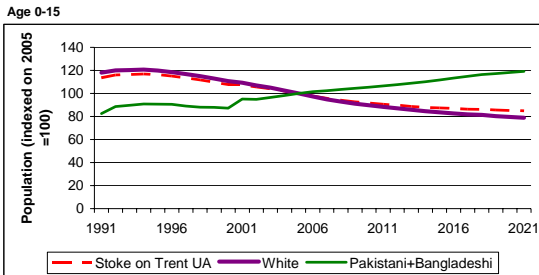
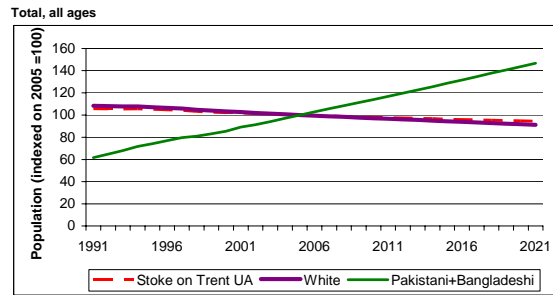
The following charts show the change over time of the population of the main groups, referenced on 2005. It shows in particular the rate of change for each group.

- Each age group of the Pakistani/Bangladeshi population is growing in size. The older ages 40-64 and 65+ are growing fastest, albeit from a smaller population to start with.
- The White population is falling in all age groups except the elderly. The White population's larger size dominates the trends for Stoke as a whole, even at the end of the forecast.

**Population change in Stoke on Trent
Estimated and forecast 1991-2021**

The charts show the total of all ethnic groups in Stoke on Trent, the White group and the Pakistani+Bangladeshi group. In each case the charts shows the trend over time relative to the population in 2005.

A discontinuity at 2001 reflects the use of the 2001 Census. Estimates for the late 1990s are not as precise as those for 2001.



Method and main assumptions; comparison with ONS projection

The forecast uses standard population forecasting techniques based on the cohort component methodology also used by the Office for National Statistics (ONS). It identifies migration, fertility and mortality separately and the detailed age structure of each population. However, we have used an ethnic group dimension which ONS does not yet include in their population estimates or forecasts for local authority areas. We have implemented the forecasts in POPGROUP, software developed by and for local authorities and now managed by the University of Manchester. The main advantage of POPGROUP is its flexibility to include partial information where it is known, as is the case for ethnic groups.

Our assumptions are summarised as follows:

Base population. We use the 1991 and 2001 Censuses detail of ethnic group age structure, adjusted to be consistent with the latest ONS estimate of full population in each of those years, and the ONS estimate of the population without an ethnic group dimension for each year up to mid-2003. Thus our 'base year' is 2001 for the ethnic group composition, and 2003 for the Stoke population as a whole. The base population is disaggregated by single year of age, for males and females separately.

Fertility. We estimate fertility from the censuses of 1991 and 2001, noting the reduction in fertility of each group. The rapid decrease of the Pakistani/Bangladeshi group from high to moderately high fertility is expected to continue until the current excess over the overall fertility is approximately halved. Age specific fertility and the trend for other ethnic groups are assumed to follow the government projections.

Mortality. In the absence of local evidence, and the ambiguous evidence from national sources, the mortality estimated for government projections for England as a whole is assumed for each group. Stoke's higher mortality than England's is applied to each group and continued in the future.

Migration. We estimate levels of migration for each group from the 1991 and 2001 censuses special migration statistics. They show net out-migration for each group from Stoke to other parts of the UK, only partly balanced by net immigration from overseas. We further adjust migration estimates after examining the change in population between 1991 and 2001. The Pakistani/Bangladeshi population has less migration to and from Stoke to other parts of the UK, but also results in a net loss to its population. We continue the same migration experience measured for the 1990s into the future.

Reliability. The assumptions we make are inevitably approximations of what will in fact happen in the future. They are based on the experience of the past ten years and are reliable in the sense of being a good representation of those trends. The fact that our projections for Stoke as a whole are very similar to those of ONS (which are also 'trend-based') gives some confirmation that we have measured past trends robustly.

Comparison with ONS. ONS does not provide forecasts with an ethnic group dimension for local authority areas, but we can compare our forecast totals for Stoke as a whole with those of ONS. The table below shows them less than one thousand apart in 2021, not only for the total of all ages but for each broad age group.

There are difference between the two sets of figures. The CCSR projection shows lower mortality and a greater gain from overseas migration, but also a greater loss from migration within the UK. These work to balance each other in the overall results of the population projections.

One should expect some differences between the two sets of figures, The CCSR forecast gives greater weight to the changes in the minority ethnic populations as they grow to be a greater percentage of Stoke's population.

Comparison of ONS and CCSR projections for Stoke-on-Trent UA

ONS	Population		Population 16- pension age	Population retirement age	Mean TFR	Mean SMR	Net natural change	Net migration with UK	Net migration overseas	Overall change
	Population at start	Population under 16								
1991- 2001-	249,400	50,500	152,300	46,600	1.7	130.4	2,470	-14,694	3,237	-8,987
2001- 2011-	240,400	47,900	147,600	44,950	1.7	111.0	683	-13,284	1,326	-11,275
2011- 2021	229,150	40,000	141,950	47,200	1.7	94.0	594	-8,457	1,190	-6,673
2021	222,450	36,850	132,400	53,300	1.7					

CCSR	Population		Population 16- pension age	Population retirement age	Mean TFR	Mean SMR	Net natural change	Net migration with UK	Net migration overseas	Overall change
	Population at start	Population under 16								
1991- 2001-	249,400	50,500	152,300	46,600	1.7	129.1	2,470	-14,694	3,237	-8,986
2001- 2011-	240,400	47,850	147,600	44,950	1.7	109.3	636	-12,896	2,621	-9,638
2011- 2021	230,800	40,250	143,000	47,500	1.7	89.6	1,949	-12,425	2,810	-7,666
2021	223,100	37,700	131,550	53,900	1.7					

Natural change and migration

The table below summarises population change for each group. As warned earlier, the change for the Black the Other groups between 1991 and 2001 is affected by a change in the classification of ethnic group during that period, which in our projections is recorded as extra migration.

The White population decrease is steady over the 1990s and the two decades of the forecast, at approximately 5% each decade. It is almost entirely the impact of net out-migration, although from 2001 an elderly population and lower fertility also make their contribution, summarised as ‘natural change’ in the table.

The Pakistani/Bangladeshi population in contrast grows by about two thousand each decade, although this represents a falling percentage. Its growth is almost entirely from an excess of births over deaths, although there is also a small contribution from migration, as the overseas immigration exceeds the net out-migration to other parts of the UK.

POPGROUP - Population Estimates and Forecasts

Population forecasts summary report scenario_2c

Stoke on Trent UA

Population	1991	2001	2011	2021
Stoke on Trent UA	249,400	240,400	230,800	223,100
White	240,700	227,900	214,700	202,550
Black	1,650	1,100	950	850
Indian	950	1,100	1,150	1,200
Pakistani+Bangladeshi	4,800	6,900	9,050	11,400
Other	1,350	3,400	4,950	7,150

Population change	1991-2001		2001-2011		2011-2021	
Stoke on Trent UA	-9,000	-3.6%	-9,650	-4.0%	-7,650	-3.3%
White	-12,800	-5.3%	-13,200	-5.8%	-12,150	-5.7%
Black	-550	-34.3%	-150	-12.3%	-100	-12.0%
Indian	+150	+18.7%	+50	+3.6%	+50	+4.8%
Pakistani+Bangladeshi	+2,150	+44.7%	+2,150	+31.0%	+2,300	+25.6%
Other	+2,050	+150.8%	+1,550	+44.8%	+2,200	+44.6%

Analysis of population change	1991-2001			2001-2011			2011-2021		
	Natural change	Net migration	Total change	Natural change	Net migration	Total change	Natural change	Net migration	Total change
Stoke on Trent UA	+2,450	-11,450	-9,000	+650	-10,250	-9,650	+1,950	-9,600	-7,650
White	-150	-12,650	-12,800	-2,450	-10,800	-13,200	-1,900	-10,250	-12,150
Black	+300	-850	-550	0	-150	-150	0	-100	-100
Indian	+150	+50	+150	+100	-50	+50	+50	0	+50
Pakistani+Bangladeshi	+1,700	+400	+2,150	+1,750	+400	+2,150	+2,000	+350	+2,300
Other	+500	+1,600	+2,050	+1,200	+350	+1,550	+1,800	+400	+2,200