

Data Management and Analysis Group

Fertility of Ethnic Groups in London

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Summary

This Briefing describes the derivation, at the Greater London level, of up-to-date fertility rate structures for London's minority ethnic populations based on the 2001 Census and focusing on the use of data from the Department of Health's Hospital Episode Statistics (HES) database in order to develop a more robust fertility projection methodology. The HES data was obtainable in aggregated form through collaborative projects with the London Health Observatory. At the time of analysis the most relevant HES data available was for the 12-month period preceding the 2001 Census, therefore the analysis was performed in terms of the 1991 Census ethnic groups.

NHS Trusts collect a variety of patient, clinical and administrative information for each episode of patient care. A delivery and each resulting birth are recorded as separate patient episodes. Consequently, a mother's age and ethnicity, which are mandatory collected data items, are held as a directly linked and robust record from which ethnicities of all births except those of mixed parentage can be accurately determined. This data provides the potential for estimating more accurate ethnic birth structures and fertility rate structures. The resulting fertility projection methodology is more robust as it eliminates current errors and scaling adjustments in 1991-based GLA fertility projection methodology arising from the assigning of ethnic group or category to mother's country of birth. In addition, a further benefit arises in that the sensitivity of the current scaling to borough model results, although not eliminated, is minimised.

The resulting Age-Specific Fertility Rate structures (ASFRs) for the whole population and the White ethnic group are of a similar shape and both peak at the 30-34 year age band. For the whole population the peak value is 94 (births per 1000 women per year), and for the White group it is 81.

For the Bangladeshi and Pakistani groups the ASFR structures are much higher. The Bangladeshi group has the highest peak ASFR of 203, occurring at the 20-24 year age band. The Pakistani group also has a high peak ASFR of 189, occurring at the 25-29 year age band.

For the Black African group the peak ASFR is 130 and occurs at the 30-34 year age band, whereas for the Black Caribbean group the peak ASFR of 81 is noticeably lower and occurs at the much younger 20-24 year age band. The Black Other group has a peak ASFR of 75 which occurs at the same older 30-34 year age band as for the Black African group.

The Indian and Chinese groups have peak ASFRs of 108 and 87 respectively, both being comparable to the peak for the whole population.

The Total Period Fertility Rate (TPFR) for the whole population is 1.63 (births per woman over her lifetime, derived as an average of all women in the population being considered). The White group TPFR is somewhat lower at 1.33 and is the lowest except for the Chinese group TPFR of 1.12. The highest TPFR is 3.29 for the Bangladeshi group and the Pakistani group also has a high TPFR of 2.76. The Black African TPFR of 2.28 is the remaining group significantly above the whole population. The Black Caribbean, Black Other and Indian TPFRs are near to or below the whole population.

1. Introduction

This Briefing describes the derivation of up-to-date fertility rate structures for London's minority ethnic populations based on the 2001 Census, with particular focus on the use of data from the Department of Health's Hospital Episode Statistics (HES) database in order to develop a more robust fertility projection methodology. The HES data was obtainable in aggregated form through collaborative projects with the London Health Observatory.

In 1991-based GLA fertility projection methodology, borough ethnic birth structures, and hence ethnic age-specific fertility rate structures, are developed by assigning ethnicity from the 10 ethnic groups in the 1991 Census to the country of birth of mother classifications used in 1991 Vital Statistics births data. Two scaling adjustments are then required to correct the resulting fertility rates to reflect the controlling age-specific fertility rates for the overall borough population. A further adjustment is required to scale projected births by mother's age and ethnicity to match totals from the GLA borough level projection models.

For 2001 it is possible to repeat this process by assigning ethnicity from the new 16 ethnic categories in the 2001 Census to the country of birth of mother classifications used in 2001 Vital Statistics births data. However, due to increasing numbers of second-generation ethnic minorities born in the UK, and London in particular, the validity of this approach has become weaker. Consequently, an alternative approach to determine ethnicity of births was undertaken using Department of Health data based on submissions by NHS Trusts.

NHS Trusts collect a variety of patient, clinical and administrative information for each episode of patient care which, together with derived data, is available on a restricted basis through the Hospital Episode Statistics (HES) database, as described in more detail in Appendix 1. Although arising from a simultaneous event, a delivery and each resulting birth are recorded as separate patient episodes. This means, for example, that a mother's age and ethnicity, which are mandatory collected data items, are held as a directly linked and robust record from which ethnicities of all births except those of mixed parentage can be accurately determined. This data therefore provides the potential for estimating more accurate ethnic birth structures and fertility rate structures. The resulting fertility projection methodology is more robust as it eliminates current errors arising from the assigning of ethnic group or category to mother's country of birth, and also eliminates the need for the current scaling adjustments. In addition, a further benefit arises in that the sensitivity of the current scaling to borough model results, although not eliminated, is minimised.

This Briefing describes development of the new methodology at the Greater London level.

2. Data

HES Database for Greater London

Information relating to births and deliveries occurring in Greater London was obtained from the Department of Health's Hospital Episode Statistics (HES) database, using the London Health Observatory (LHO) extract of 1.76 million records for Greater London held in a Microsoft Access database. The data used was from the financial 12-month period for 2000/2001, since HES is structured on the financial year, 1st April to 31st March. This was the closest available year to the 2001 Census. Therefore, the recorded ethnicities were in accordance with the 10 ethnic groups used in the 1991 Census, with the exception that the HES 1991 ethnicity coding definitions do not have a code for the group Other Asian (see Appendix 1).

The following HES information fields were used to perform Access Queries to extract births and deliveries data sub-sets:

Field name	Data Item	Description
admimeth:	Admission Method.	Method of admission to hospital.
startage:	Age at start of episode.	Age in whole years on admission, automatically derived from admission date and date of birth fields. For patients under 1 year old, special codes in the range 7001 to 7007 apply (7001 = less than one day).
epitype:	Episode Type.	Type of episode, eg birth, delivery, general.
ethnos:	Ethnic Group.	Ethnicity.
resladst:	Local Authority District.	County (first two characters) and Local Authority (last two characters), automatically derived from the patient's postcode in the home address field.
agegrp:	Age Group.	Age group by five-year age band, derived from field startage .

Extraction of HES Births Data

Births data was extracted from the Access database by specifying a Query with the following parameters:

admimeth = 28 or 3* or 8*

(where 28 = emergency admission;
31, 32 = maternity admissions;
81 = transfer from another hospital;
82, 83 = other baby admissions;
84, 89 = other admissions).

startage = 7001 (7001 = age < 1 day).

ethnos = field of required data (to obtain ethnicity of newborn).

The resulting births data, indicating completeness of babies' ethnicity recording, is summarised in Table 1.

By way of exploration of the database, a further Access extract of births data was performed by specifying a Query with the following parameters:

epitype = 3 or 6 (where 3 = birth episode and 6 = other birth event).

ethnos = field of required data (to obtain ethnicity of newborn).

The results of this Query are not tabulated, but the objective of investigating births data is discussed in the Analysis, Births section.

Extraction of HES Deliveries Data

For an initial overview, deliveries data was extracted from the Access database by specifying a Query with the following parameters:

epitype = 2 or 5 (where 2 = delivery episode and 5 = other delivery event).

ethnos = field of required data (to obtain ethnicity of mother).

The resulting deliveries data, indicating completeness of mothers' ethnicity recording, is summarised in Table 2.

As London hospitals also deal with maternities of non-London residents, deliveries data for London Residence of mother, and also age of mother, was extracted from the Access database by specifying a Query with the following parameters:

epitype = 2 or 5 (where 2 = delivery episode and 5 = other delivery event).

resladst = between 00AA and 00BK (to select Greater London residents only).

agegrp = field of required data (to obtain structure of age of mother).

ethnos = field of required data (to obtain ethnicity of mother).

The resulting deliveries data for London Residence, by five-year age band of mother, and indicating completeness of mothers' ethnicity recording, is summarised in Table 3.

ONS Births Data

Table 5 is a breakdown of live births for residence in Greater London by place of confinement, taken from ONS Vital Statistics for 2001 (Table VS1).

ONS Maternities and Births Data

Table 6 is a summary of maternities and births for residence in Greater London, taken from ONS Vital Statistics for 2001 (Tables VS1 and VS2).

ONS Birth Structure by Age of Mother

Table 7 includes a breakdown of births by age of mother for residence in Greater London, taken from ONS Vital Statistics for 2001 (Table ACWW LRCBOS, Live births to overseas born mothers).

Populations of Females of Reproductive Age

Table 9 lists populations of females of reproductive age in Greater London at the 2001 Census, which were obtained from ONS Table ST101: Sex and Age by Ethnic Group. This data was in the form of five-year age bands (from 15-19 years through to 45-49 years) for each of the 16 ethnic categories. The 2001 Census total of females of reproductive age was 1,992,246, whereas the ONS 2001 mid-year estimate was 1,996,880, a variation of 4,634 so that the overall error in not using mid-year figures was 0.2%.

3. Analysis

In the following analysis it was necessary to relate HES births and deliveries data for the financial year 2000/01 to Vital Statistics maternity and live birth data for calendar year 2001, as HES data beyond 31st March 2001 was not available at the time of analysis. The Vital Statistics live births total for Greater London was 104,162 in 2001 and 104,695 in 2000, a variation of 533 or 0.5%, which can be considered acceptably small and hence allow relating of the VS and HES periods.

In assessing the HES births and deliveries data for completeness of ethnicity recording in subsequent analysis, the criterion 'stated ethnicity' is used to differentiate between HES codings that specify or exclude ethnicities and those that indicate an unknown status. In the coding definitions for the HES "ethnos" ethnicity field, the important leading digit can be coded 0 to 9, or X (see Appendix 1). The criterion "stated ethnicity" is the sum of the count of codes 0 to 8 inclusive, ie the 1991 ethnic groups excluding the group Other Asian, but including a HES version of the group Other, which is assumed to include the group Other Asian for which there is no HES code.

Births

Table 1 shows that the 2000/01 HES records for Greater London contained a total of 100,831 births according to the first Access Query by the "admimeth" field. This was reasonably close to the 99,628 NHS live births by London residence given by ONS Vital Statistics for 2001 as shown in Table 5. Although not tabulated, the second Access Query, by the "epitype" field, produced 98,843 births. The difference in HES births between the "admimeth" and "epitype" Queries could be due to the range of codes specified in the "admimeth" Query having picked up some birth-related, antenatal, and possibly other spurious records as well as actual birth records.

A high proportion of the 100,831 births by the "admimeth" Query in Table 1, 37,645, were of Unknown residence and a further 4,374 were resident outside London. It is likely that the 37,645 births of Unknown residence were mostly of London residence, by proportion of the London and non-London codes. The proportion of births where ethnicity was stated was 34.3% for London Codes of residence and 26.8% for Unknown residence codes, therefore the level of ethnicity completeness is quite low, whether the suggested composition of Unknown residence is accepted or not. This can be explained by the fact that an NHS birth episode, which is an episode that relates to the baby but not the mother, is an exception where ethnicity recording is optional rather than mandatory.

The objective of investigating HES births records was to assess completeness of recording of ethnicity of the newborn with the purpose of establishing linkage to ethnicity of the mother. Had the completeness of ethnicity coding of the births data been sufficient, it would have enabled analysis of births of mixed ethnicity in relation to the ethnicity of the mothers to be studied in future analysis using 2001 Census ethnic categories and 2001/2002 HES data. A further barrier exists in this respect, whereby data protection requirements do not permit access to personal fields such as full home address in birth and delivery records that would be necessary to establish family linkage. Due to these constraints the HES births data was not used further and attention was focused on HES deliveries data.

Deliveries

Table 2 shows that the 2000/01 HES records for Greater London contained a total of 95,901 deliveries according to the Access Query based on the “epitype” field, almost 3,000 fewer than births identified using the “epitype” field. Possible reasons for this discrepancy are miscoding or blank coding of the “epitype” field. At 89,807, a very high proportion of deliveries, 93.6%, were of London residence and a very small number, 575, were of unknown residence. The proportion of deliveries where ethnicity was stated was 70.2% for London Codes of residence, and roughly similar for non-London and Unknown residence. The high proportions of stated London residence and stated ethnicity indicate a much higher level of completeness than for births. This can be largely explained by the fact that for an NHS delivery episode, which is an episode that relates to the mother but not the baby, ethnicity recording is mandatory. Therefore the deliveries data was considered to be sufficient to estimate age-specific fertility rates by ethnicity of mother.

Table 3 shows that in the 2000/01 HES records for deliveries by London Residence, the high level of completeness of mothers’ ethnicity recording was maintained within the fertility age range 15–49 years. The number of deliveries of erroneous age band coding (blank, -999, <1 year, and 50+ years) was a very low 107. The total number of deliveries identifiable by reproductive age of mother was therefore 89,700, with ethnicity of mother stated for 63,026 of these to give a resultant ethnicity completeness of 70.3%. Furthermore, although not tabulated, when broken down by five-year age band of mother, the high level of completeness of mothers’ ethnicity recording was maintained throughout all seven age bands, ranging from 66.8% to 71.2%. The full breakdown of deliveries by mothers’ five-year age band and ethnicity for London residence is shown in Table 4. HES deliveries in the 10-14 age band are included in the 15-19 age band, and the very small number of deliveries for ages 50+ have been omitted as being of erroneous and indeterminate age.

ONS Vital Statistics Live Births data for Greater London in Table 5 indicates that of the 104,162 live births occurring in 2001, 99,628 occurred within the confines of the NHS. The sample of 63,026 HES deliveries of stated mother’s ethnicity and reproductive age in Table 3 and Table 4 was assumed to be taken from the 99,628 population of NHS births. It was further assumed that the HES sample was representative, in terms of mothers’ ethnicity and age, of all 104,162 births in Greater London, giving an overall sample rate of 60.5%. This assumption may be less valid at the age band/ethnicity subset level, depending on sample size

ONS Vital Statistics maternities and births data for Greater London in Table 6 shows that there were 103,143 maternities and 104,162 Live Births in Greater London in 2001, the ratio of Live Births/Maternities being 1.0099. This ratio is very close to 1.0 because additional births arising from the 1,590 multiple maternities (approximately 98% of which produced twin births) were partially offset by an overall 620 stillbirths. On the basis that a Vital Statistics maternity and a HES delivery are equivalent, it was assumed that 1 HES delivery record represents 1 Live Birth, ie scaling to adjust from deliveries to births was not considered necessary.

Table 7 shows a breakdown of ONS Vital Statistics Live Births in Greater London in 2001 by five-year age band of mother. It also shows the corresponding breakdown for the London Residence 2000/2001 HES sample of 63,026 deliveries of stated ethnicity. This data enabled a ratio between actual populations of Vital Statistics Live Births and samples of HES deliveries for each age band of mother to be derived. These age band ratios were then applied to the HES delivery data for each ethnicity in Table 4 to produce a structure

by age band and 1991 ethnic group of mother for all 104,162 births in Greater London in 2001, as shown in Table 8. It should be noted that one of the 1991 ethnic groups, Other Asian, is not used in HES. It was assumed that HES deliveries relating to this ethnicity of mother were included in the 1991 ethnic group Other, referred to as HES Other in Table 8.

Table 9 shows the population structure, by five-year age band and ethnicity, of females of reproductive age in Greater London at the 2001 Census. It was necessary to re-aggregate some of the data from 2001 ethnic categories to 1991 ethnic groups so that the population structure corresponded to the ethnicity structure of births, derived from HES deliveries, in Table 8. The links between 2001 ethnic categories and 1991 ethnic groups for this re-aggregation are shown in Table 10. Since HES does not use the Other Asian 1991 ethnic group, the Other Asian and Other female population groups were aggregated as a HES Other grouping to correspond with the assumption made for Table 8. Therefore, the HES Other grouping of populations is comprised of four 2001 ethnic categories. The resulting population structure of females of reproductive age in accordance with 1991 ethnicity codes used in HES is shown in Table 11.

The Age-Specific Fertility Rate (ASFR) structure, by mother's five-year age band, for the whole population and each 1991 ethnic group, were then derived using the births structure in Table 8 and the female population structure in Table 11, using the following definition:

$$\text{ASFR}(x, y) = 1000 \times \frac{\text{Births from HES 2000/01}(x, y)}{\text{Women at 2001 Census}(x, y)}$$

where:

x = five-year age band of mother;

y = ethnicity (or whole population);

units of ASFR (x, y) are: *births per 1000 women per year*.

If $x = 15$ to 49 , this gives the General Fertility Rate (GFR).

The Total Period Fertility Rates (TPFR), for the whole population and each 1991 ethnic group, were derived using the following definition:

$$\text{TPFR}(y) = \frac{5}{1000} \times \sum \text{ASFR}(x, y)$$

where:

units of TPFR (y) are: *births per woman over her lifetime* (an average of all women in the population being considered).

The resulting ASFR, GFR and TPFR values by ethnicity are tabulated in Table 12. The ASFR structures are shown in three graphs, Figures 1, 2 and 3, for clarity. The TPFR values are shown in Figure 4.

4. Results

From Figure 1 it can be seen that, in terms of five-year age band, the ASFR structures for the whole population and the White ethnic group are of a similar shape and both have a well-defined (ASFR) peak at the 30-34 year age band. For the whole population the peak value is 94 (births per 1000 women per year), and for the White group it is 14% lower at 81. The White group is lower than the whole population at all age bands, although at the lowest and high age bands the difference is minimal.

For the Black African group the ASFR structure is generally higher than that for the whole population. ASFRs of similar value to the whole population peak or above occur over the three consecutive age bands between 20 to 34 years. The peak ASFR is 130, which is 39% higher than the whole population peak and occurs at the same 30-34 year age band.

For the Black Caribbean group the ASFR structure is flatter than the whole population structure, with ASFRs of similar value to the whole population peak occurring over the three consecutive age bands between 20 to 34 years. The peak ASFR is 81, which is 14% lower than the whole population peak, and occurs two age bands earlier, at 20-24 years.

In Figure 2 it can be seen that for the Indian group the ASFR structure is generally similar to that for the whole population, the only significant difference being that the peak ASFR is 108, which is 15% higher than the whole population peak and occurs at the next youngest age band, 25-29 years.

For the Pakistani and Bangladeshi groups the ASFR structures are of a similar shape and both are generally much higher than for the whole population, except at the lowest and high age bands. ASFRs of similar value to the whole population peak or above occur over the four consecutive age bands between 20 to 39 years. For the Pakistani group the peak ASFR is 189, which is 102% higher than the whole population peak and occurs at the next youngest age band, 25-29 years. For the Bangladeshi group the peak ASFR is 203, which is 117% higher than the whole population peak and occurs two age bands earlier, at 20-24 years.

The peak ASFR for the Bangladeshi group is the highest peak of all the ethnic groups, and also has the youngest age band of occurrence (the peak ASFR for the Black Caribbean group occurs at the same age band, but is lower than the whole population peak).

In Figure 3 it can be seen that the ASFR structure for the Black Other group is not too dissimilar from the whole population, with the ASFRs at the two consecutive age bands between 30 and 39 years being lower. The peak ASFR for the Black Other group is 75, which is 20% below the whole population peak and occurs at the same 30-34 year age band. The ASFR structure for the Black Other group is also similar to the Black Caribbean group over the five highest age bands (ages 25 to 49 years) and somewhat lower at the two lowest age bands (ages 15 to 24 years).

The ASFR structure for the Chinese group is very similar to the whole population over the four highest age bands (ages 30 to 49 years). Its' peak ASFR is 87, which is 7% below the whole population peak and occurs at the same 30-34 year age band. Over the lowest three age bands (ages 15 to 29 years), the ASFR structure for the Chinese group is much lower than the whole population and all other individual ethnic groups. This may be due to a comparatively large proportion of the Chinese group being comprised of students.

The ASFR structure for the HES Other grouping is much higher than the whole population and broadly similar to the Pakistani and Bangladeshi groups. Its peak ASFR is 200, which is 114% above the whole population peak and similar to the Pakistani and Bangladeshi peaks, and occurs at the 30-34 year age band, which is the same age band as the whole population peak but an older age band than the Pakistani and Bangladeshi peaks.

The reasons for the high HES Other ASFR structure are not clear. A mismatch between numerator and denominator could have arisen from the differences in composition of ethnicities between the HES Other grouping for deliveries (which was assumed to be comprised of the Other and Other Asian 1991 ethnic groups) and the HES Other grouping for female populations (which was aggregated from four of the 2001 ethnic categories). The HES Other grouping for deliveries may have been used as a 'sink' group and may therefore contain some deliveries that belong in other groups. In the case of the HES Other grouping for female populations, no attempt was made to apportion the sixteen 2001 categories between the ten 1991 groups, therefore the populations within this grouping may be under-represented. The ASFR results for HES Other should therefore be regarded as less meaningful than for the defined ethnicities.

Figure 4 shows the TPF_R for each ethnic group. For the whole population of Greater London the TPF_R is 1.63 (births over a woman's lifetime, derived as an average of all women in the population being considered). For the White ethnic group the TPF_R of 1.33 is 18% lower than for the whole population. TPF_Rs for the Black Caribbean, Black Other and Indian groups are broadly similar to the whole population. The highest TPF_R of the defined ethnicities is 3.29 for the Bangladeshi group, which is 102% above the whole population. TPF_Rs for two other ethnic groups are notably higher than the whole population, the Pakistani group (2.76, 69% higher) and the Black African group (2.28, 40% higher). The Chinese group has the lowest TPF_R of 1.12, which is 31% lower than the whole population, for possible reasons mentioned previously. The HES Other grouping actually has the highest TPF_R of 3.66 (even higher than the Bangladeshi group), but as discussed above the findings for this grouping should be regarded as less meaningful than for the defined ethnicities.

Table 1. HES Births in Greater London by Local Authority Code of Residence (April 2000 – March 2001)

Local Authority of Residence of Baby	Total Births	Total Births by Stated Ethnicity of Baby	% Births by Stated Ethnicity of Baby
<i>All Codes</i>	100,831	32,543	32.3
London Codes	58,812	20,201	34.3
Non-London	4,374	2,240	51.2
Unknown	37,645	10,102	26.8

Source: Department of Health, Hospital Episode Statistics.

NOTE: In HES the patient in a birth episode is the baby.

Table 2. HES Deliveries in Greater London by Local Authority Code of Residence (April 2000 – March 2001)

Local Authority of Residence of Mother	Total Deliveries	Total Deliveries by Stated Ethnicity of Mother	% Deliveries by Stated Ethnicity of Mother
<i>All Codes</i>	95,901	67,674	70.6
London Codes	89,807	63,070	70.2
Non-London	5,519	4,223	76.5
Unknown	575	381	66.3

Source: Department of Health, Hospital Episode Statistics.

NOTE: In HES the patient in a delivery episode is the mother.

Table 3. HES Deliveries for London Residence by Age of Mother (April 2000 – March 2001)

Age of Mother	Total Deliveries	Total Deliveries by Stated Ethnicity of Mother	% Deliveries by Stated Ethnicity of Mother
All Ages	89,807	63,070	70.2
15-49 *	89,700	63,026	70.3
Other Ages **	107	44	41.1

Source: Department of Health, Hospital Episode Statistics.

NOTE: In HES the patient in a delivery episode is the mother.

* 15-49 range includes 24 deliveries by stated ethnicity of mother recorded in the 10-14 age band.

** Other Age Codings (miscodings) – deliveries by stated ethnicity of mother:

Blank or -999:	29
<1:	13
50-54:	1
65-69:	1

Table 4 HES Deliveries for London Residence by Age Band and Stated Ethnicity of Mother (April 2000 – March 2001)

Age of Mother	Stated Ethnicity of Mother									
	All People	White	Black Caribbean	Black African	Black Other	Indian	Pakistani	Bangla -deshi	Chinese	HES Other
15-19	3,323	1,908	321	179	136	72	73	184	14	436
20-24	10,440	4,869	557	776	264	719	588	1,215	45	1,407
25-29	16,873	8,523	648	1,625	311	1,494	867	1,066	126	2,213
30-34	19,579	11,560	914	2,090	351	1,188	562	453	215	2,246
35-39	10,617	6,657	691	957	221	462	182	172	133	1,142
40-44	2,094	1,277	160	193	37	93	30	40	27	237
45-49	100	47	7	13	#	6	#	#	#	19
15-49	63,026	34,841	3,298	5,833	1,320*	4,034	2,305*	3,135*	560*	7,700

Source: Department of Health, Hospital Episode Statistics.

indicates suppressed values (from 1 to 5 inclusive).

* indicates values rounded to the nearest 5.

Table 5 ONS Births in Greater London by Place of Confinement – 2001

Place of Confinement	Live Births
<i>Total</i>	104,162
NHS	99,628
Non-NHS	2,389
At Home	2,058
Elsewhere	87

Source: ONS, Vital Statistics 2001; Table VS1.

Table 6 ONS Maternities and Births in Greater London - 2001

Event Type	Occurrence
All Maternities	103,143
Live Births	104,162
(difference)	(1,019)
Ratio: Live Births/Maternities	1.0099
Multiple Maternities	1,590
Still Births	620

Source: ONS, Vital Statistics 2001; Tables VS1 and VS2.

Table 7 Structure of ONS Live Births in Greater London in 2001 by Age Band of Mother

Age of Mother	Vital Statistics * Live Births	HES ** Deliveries	Ratio Vital Statistics/HES
All Ages	104,162	63,026	1.65
15-19	5,309	3,323	1.60
20-24	16,320	10,440	1.56
25-29	26,182	16,873	1.55
30-34	33,228	19,579	1.70
35-39	19,146	10,617	1.80
40-44	3,747	2,094	1.79
45+	230	100	2.30

* Source: ONS, Vital Statistics 2001; Table ACWW, Live births to overseas born mothers.

** Source: Department of Health, Hospital Episode Statistics.

Table 8 Structure of All Births in Greater London in 2001 by Age Band and 1991 Ethnicity of Mother

Age of Mother	Ethnicity of Mother									
	All People	White	Black Caribbean	Black African	Black Other	Indian	Pakistani	Bangla -deshi	Chinese	HES Other
15-19	5,309	3,048	513	286	217	115	117	294	22	697
20-24	16,320	7,611	871	1,213	413	1,124	919	1,899	70	2,199
25-29	26,182	13,225	1,006	2,522	483	2,318	1,345	1,654	196	3,434
30-34	33,228	19,619	1,551	3,547	596	2,016	954	769	365	3,812
35-39	19,146	12,005	1,246	1,726	399	833	328	310	240	2,059
40-44	3,747	2,285	286	345	66	166	54	72	48	424
45-49	230	108	16	30	#	14	#	#	#	44
15-49	104,162	57,902	5,489	9,669	2,175*	6,587	3,720*	5,005*	945*	12,669

indicates suppressed values (derived from suppressed values in Table 4).

* indicates values rounded to the nearest 5.

Table 9 Population Structure of Females of Reproductive Age in Greater London in 2001 by Age Band and 2001 Ethnic Category

Age Band	Ethnicity							
	All People	White			Mixed			
		British	Irish	Other White	White & Black Caribbean	White & Black African	White & Asian	Other Mixed
15-19	204,762	104,676	2,858	12,040	3,854	1,325	2,524	2,874
20-24	276,980	145,423	5,805	36,878	2,619	1,497	2,569	2,819
25-29	360,393	192,891	9,417	56,593	2,514	1,724	2,933	3,132
30-34	354,918	187,865	10,874	43,644	2,679	1,796	2,569	2,827
35-39	322,920	178,486	9,935	29,693	2,291	1,460	2,118	2,350
40-44	258,338	146,091	8,093	21,353	1,439	1,102	1,335	1,579
45-49	213,935	127,178	8,297	17,347	634	711	1,056	1,274
15-49	1,992,246	1,082,610	55,279	217,548	16,030	9,615	15,104	16,855

	Asian or Asian British				Black or Black British		Chinese or Other		
	Indian	Pakistani	Bangla-deshi	Other Asian	Caribbean	African	Black Other	Chinese	Other
15-19	17,490	6,533	8,714	4,266	12,075	15,480	3,110	3,260	3,683
20-24	18,925	7,288	9,355	4,848	10,766	14,673	2,557	3,522	5,436
25-29	21,551	7,129	9,107	5,768	12,996	20,017	2,360	4,803	7,458
30-34	20,540	6,833	5,894	5,964	20,803	27,307	3,480	4,184	7,659
35-39	19,078	4,888	3,659	5,688	25,661	23,601	4,016	3,824	6,172
40-44	18,676	4,508	2,933	5,171	19,181	15,752	2,069	3,643	5,413
45-49	16,322	3,624	3,195	4,159	11,733	8,918	850	3,700	4,937
15-49	132,582	40,803	42,857	35,864	113,215	125,748	18,442	28,936	40,758

Source: ONS Table ST101: Sex and Age by Ethnic Group, 2001 Census.

Table 10 Ethnic Classification Links: 2001 Census to 1991 Census

1991 Ethnic Group	2001 Ethnic Category
White	White: British White: Irish White: Other White
Black Caribbean	Black or Black British: Caribbean
Black African	Black or Black British: African
Black Other	Black or Black British: Other Black Mixed: White & Black Caribbean Mixed: White & Black African
Indian	Asian or Asian British: Indian
Pakistani	Asian or Asian British: Pakistani
Bangladeshi	Asian or Asian British: Bangladeshi
Chinese	Chinese or Other: Chinese
Other Asian *	Mixed: White & Asian Asian or Asian British: Other Asian
Other *	Mixed: Other Mixed Chinese or Other: Other

* No coding for Other Asian in HES, therefore Other Asian and Other were aggregated to link to HES Other in Table 8.

Table 12 Age-Specific Fertility Rates and Total Period Fertility Rates for Greater London in 2001 by 1991 Ethnic Group

ASFR	Ethnicity										
	Age Band	All People	White	Black Caribbean	Black African	Black Other	Indian	Pakistani	Bangla-deshi	Chinese	HES Other
	15-19	26	25	42	18	26	7	18	34	7	52
	20-24	59	40	81	83	62	59	126	203	13	140
	25-29	73	51	77	126	73	108	189	182	41	178
	30-34	94	81	75	130	75	98	140	130	87	200
	35-39	59	55	49	73	51	44	67	85	63	126
	40-44	15	13	15	22	14	9	12	24	13	31
	45-49	1	1	1	3	#	1	#	#	#	4
	15-49	52	43	48	77	49	50	91	117	33	117
TPFR		1.63	1.33	1.70	2.28	1.51*	1.63	2.76*	3.29*	1.12*	3.66

indicates suppressed ASFR values (derived from suppressed values in Table 8).

* indicates TPF values where derivation excludes suppressed ASFR values.

Figure 1. ASFR by 1991 Ethnic Group - Greater London 2000/01

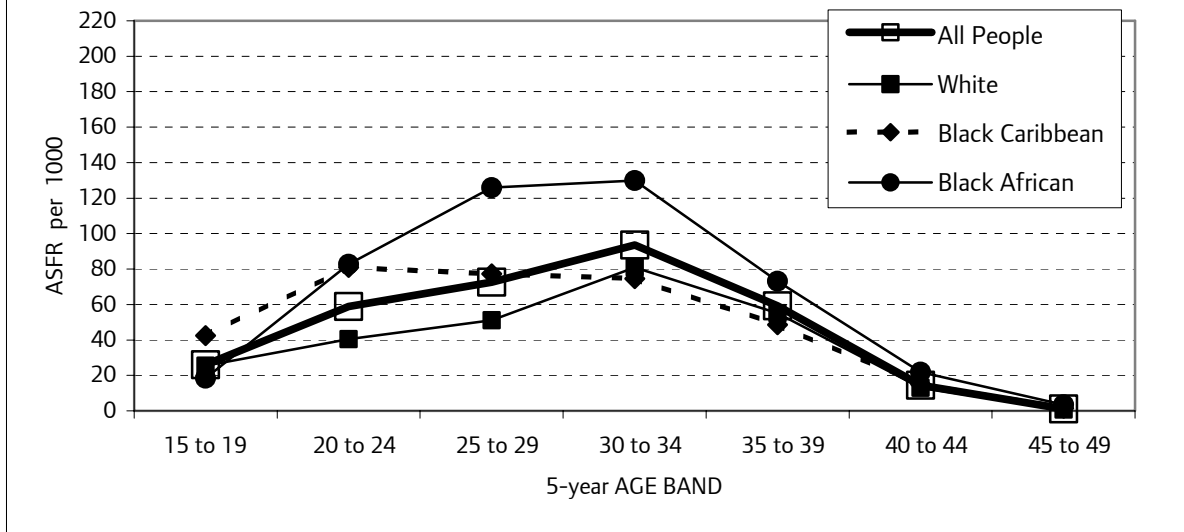


Figure 2. ASFR by 1991 Ethnic Group - Greater London 2000/01

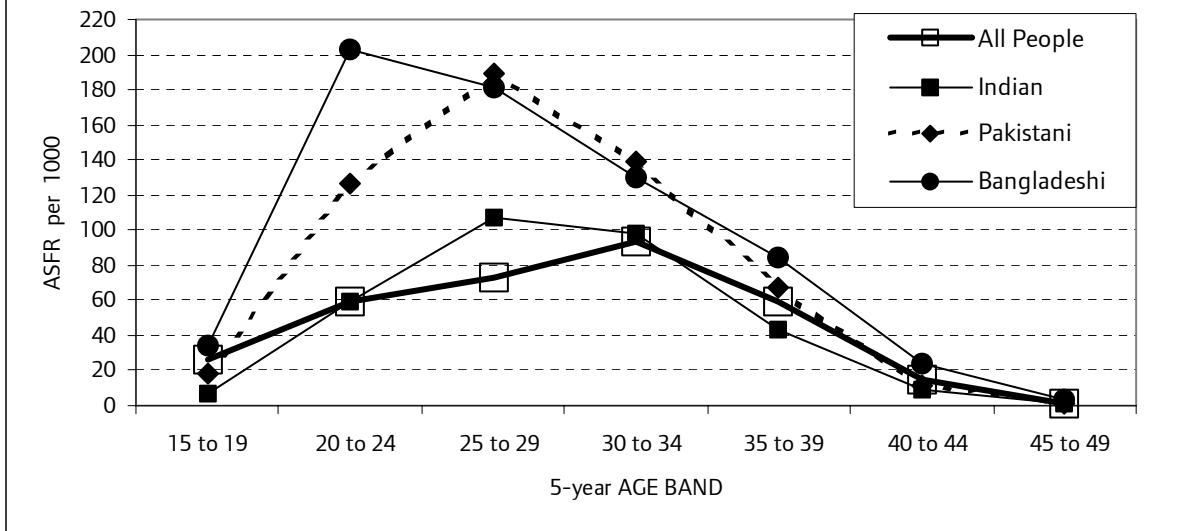


Figure 3. ASFR by 1991 Ethnic Group - Greater London 2000/01

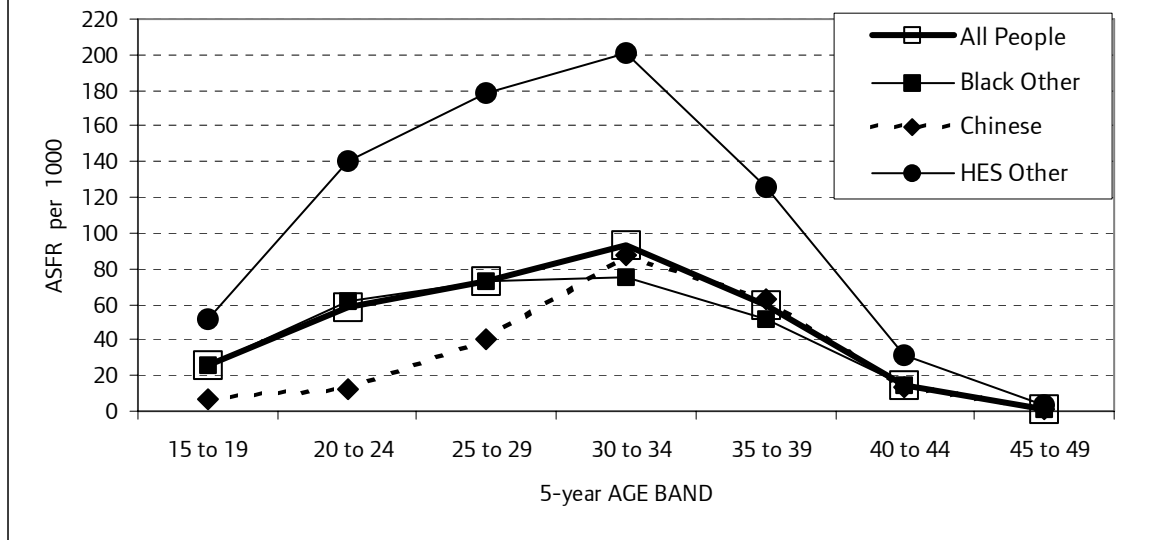
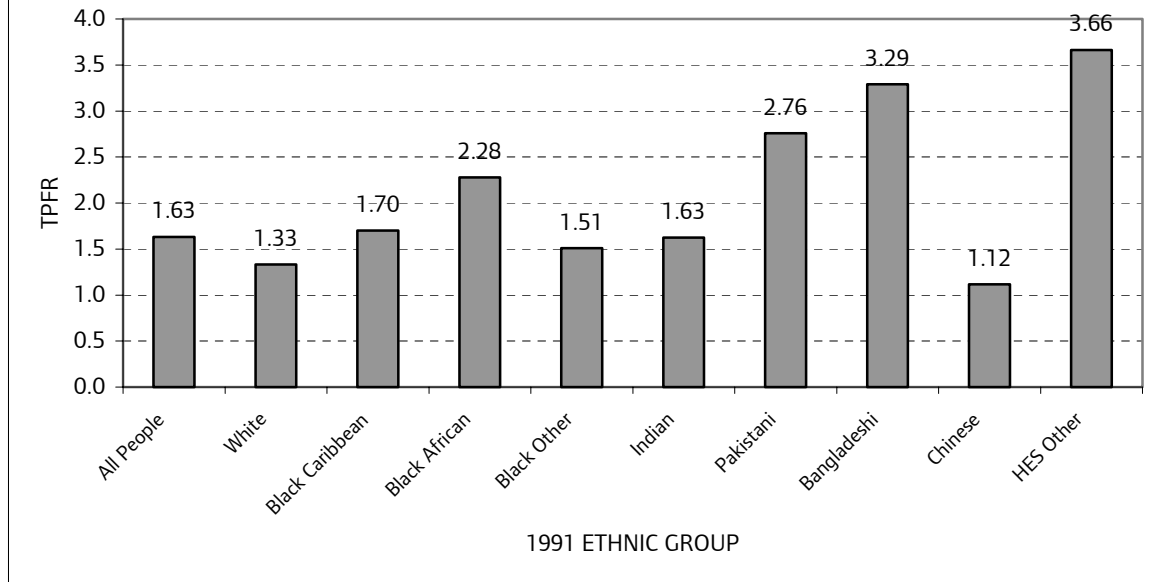


Figure 4. TPF by 1991 Ethnic Group - Greater London 2000/01



Appendix 1

The Hospital Episode Statistics (HES) Database

(www.doh.gov.uk/hes)

The Department of Health's Hospital Episode Statistics (HES) database has existed since 1989. It is a secure record-level database of hospital admissions and treatments, originally being restricted to admitted patients but now including outpatient activity. It consists of data submitted by NHS Trusts to the NHS-Wide Clearing Service (NWCS). The NWCS is a transactional database continuously updated, whereas HES takes a subset of the NWCS data at regular points in time (quarterly and annually), and cleans up the data to improve quality.

HES covers all NHS Trusts in England only (there are separate databases for Northern Ireland, Scotland and Wales). Private hospitals are not included, although private patients treated in NHS hospitals are.

Information from HES on patient care is used to provide wide-ranging analysis for the NHS, Government and many other organisations and individuals who have an interest in health and healthcare administration.

The type of information collected by NHS Trusts for each episode of care and submitted to the NWCS database includes facts about the patient treated (eg age), the NHS Trust (or PCT) who provided the care, administrative details (including admission and discharge date), and clinical details of diagnoses and treatments. Currently, HES extracts contain up to 262 fields of collected information and derived data, although not all fields are applicable to each episode.

Each HES annual extract contains around 12 million admitted patient records, but because these relate to individual patients direct access to them is restricted, in order to comply with data protection legislation. Data at record level is usually made available in anonymised form. Furthermore, not all fields are permitted to all users at anonymised record level, but some of these restricted fields may be accessible at aggregated level.

Typically, users of anonymised HES data may include medical researchers, statistical analysts (eg Department of Health), public health specialists (eg epidemiologists), and disease registers (eg regional cancer registry).

Analysts at the London Health Observatory (LHO) are permitted access to anonymised record-level extract data for Greater London only, and this is further restricted to certain fields of information. LHO have a HES extract for Greater London for each data year, 1st April – 31st March, from 1995/96 to 2000/01. The 2000/01 HES extract for Greater London contains 1.76 million records and 44 fields of information.

From the point of view of ethnic demography, there are several fields of information in the LHO HES extracts, which are accessible to the GLA in aggregated form through collaborative projects, that can improve modelling of ethnic fertility, the main ones being:

- ethnicity of mother in relation to delivery episode (collection mandatory);
- age of mother in relation to delivery episode (automatically derived from mandatory collected date of birth and admission date);

- ethnicity of baby in relation to birth episode (although collection of ethnicity at birth is optional rather than mandatory);
- local authority of residence of mother in relation to delivery episode (automatically derived from mandatory collected home address/postcode);
- local authority of residence of baby in relation to birth episode (automatically derived from mandatory collected home address/postcode of mother);
- gender of baby (collection mandatory).

Although births and deliveries outside the NHS are not included, these are relatively small in number, as indicated by Vital Statistics. If of sufficient coverage and quality, HES data may enable improved and updated understanding of ethnic group ASFR structure and male/female birth ratio. Insight into trends over the last five or six years may also be possible.

For further information, a more extensive range of HES fields (as designated and defined in the Hospital Episode Statistics Data Dictionary) that may be of relevance to demographic fertility analysis is listed below, although not all are present or permitted in the LHO 2000/01 extract. Note that delivery (mother's episode) and birth (baby's episode) are entered as separate episodes.

Field Category: Patient

"startage" = Age on admission (automatically derived from date of birth and admission date).

"ethnos" = Ethnic origin (collection mandatory from 1995-96).
 Maternity (mother's episode) and birth (baby's episode) are entered as separate episodes. Mother's ethnicity is usually OK. Baby's ethnicity depends on mother and father – may be missing or unstated.
 From April 2001 the codes were changed to conform to the 2001 Census classification. However, HES continued to accept the old codes as well as the new codes for the 2001-02 data year.

From 1995-96 to 2000-01:

- 0n White
- 1n Black Caribbean
- 2n Black African
- 3n Black Other
- 4n Indian
- 5n Pakistani
- 6n Bangladeshi
- 7n Chinese
- 8n Any other ethnic group
- 9n Not given
- Xn Not known

Note: n = coding option for local use, usually n = 0

From 2001-02:

- An British (White)
- Bn Irish (White)
- Cn Any other White background
- Dn White and Black Caribbean (Mixed)
- En White and Black African (Mixed)

Fn	White and Asian (Mixed)
Gn	Any other Mixed background
Hn	Indian (Asian or Asian British)
Jn	Pakistani (Asian or Asian British)
Kn	Bangladeshi (Asian or Asian British)
Ln	Any other Asian background
Mn	Caribbean (Black or Black British)
Nn	African (Black or Black British)
Pn	Any other Black background
Rn	Chinese (other ethnic group)
Sn	Any other ethnic group
Zn	Not stated

Note: n = coding option for local use, usually n = 0

"newnhsno"	= NHS number of patient (from 1997-98). Note that the new NHS number is a unique identifier, whereas the old NHS number is non-unique.
"postdist"	= Postcode district (outcode) of patient's residence (from 2002-03) (automatically derived).
"homeadd"	= Postcode of patient (mother's postcode is used for birth episodes).
"sex"	= Sex of patient.

Field Category: Admission and Discharge

"admidate"	= Date of Admission.
"disdate"	= Date of Discharge.

Field Category: Episodes and Spells

"epidur"	= episode duration (automatically derived).
"epitype"	= Type of episode (eg delivery or birth, hospital or non-hospital birth).

Field Category: Diagnoses

"diag_n"	= Up to 7 diagnosis fields may be recorded during an episode, using ICD coding definitions in International Statistical Classification of Diseases and Related Health Problems, Tenth Revision (WHO), eg: ICD 10 Code: O80-O84 = Delivery, where O80-O83 = single delivery, O84 = multiple delivery; ICD 10 Code: Z37* = Outcome of Delivery, identifying single, twin and other multiple births, and whether liveborn or stillborn).
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Field Category: Geographical (derived)

"currward"	= Current electoral ward of patient (automatically derived).
"resladst"	= Local authority district of residence of patient (automatically derived).

Field Category: Maternity

"birordr"	= Birth order (multiple births).
"birstat"	= Live or still birth.
"matage"	= Mother's age at delivery (automatically derived).
"numbaby"	= Number of babies (live + still).
"sexbaby"	= Sex of baby.

Appendix 2

Summary of Assumptions

1. HES data is for financial year 2000/01 and VS live births and deliveries data is for calendar year 2001. Vital Statistics live births for Greater London were 104,162 in calendar 2001 and 104,695 in calendar 2000, a difference of 533 or 0.5%, therefore the HES 2000/01 period can be considered suitable to relate to the calendar year of the Census.
2. Populations of females of reproductive age (15–49 years) in Greater London were taken to be those at the 2001 Census, not the ONS 2001 MYE. (Census total = 1,992,246; ONS MYE total = 1,996,880, difference = 4,634, so overall error = 0.2%)
3. The sample of 63,026 HES deliveries of stated mother's ethnicity and age in Table 3 and Table 4 is in relation to the 99,628 NHS births. It was assumed that the HES sample was representative of all 104,162 births in Greater London in 2001, giving an overall sample rate of 60.5%. When broken down by age band and ethnicity, some sample sizes may be small, so this assumption may not be so valid.
4. Maternity > Delivery > Birth. Assume that 1 Delivery record represents 1 Birth. Vital Statistics data shows that there were 103,143 maternities and 104,162 Live Births in Greater London in 2001, the ratio of Live Births/Maternities being 1.0099. This ratio is very close to 1.0 because additional births arising from the 1590 multiple maternities (98% of which were twin births) were partially offset by an overall 620 stillbirths. On the basis that a VS maternity and a HES delivery are equivalent, it was thus assumed that 1 HES Delivery = 1 Live Birth, on an aggregate basis ie scaling to adjust from deliveries to births was not considered necessary.
5. One of the ten 1991 Census ethnic groups, Other Asian, has no coding in HES. It was assumed that HES deliveries related to this ethnicity of mother were included in the Other 1991 ethnic group, referred to as HES Other in Table 8.
6. Base populations of females of reproductive age were from the 2001 Census. It was necessary to re-aggregate some of the sixteen 2001 ethnic categories to the nine 1991 ethnic groups used in HES, on the basis described in 5 above. This resulted in the HES Other grouping being comprised of four 2001 ethnic categories as defined in Table 10.

Regular briefings and data from GLA Data Management and Analysis Group

DMAG has instituted a new series of publications, covering all aspects of DMAG work.

DMAG Briefings will now incorporate the Census Information Notes (CIN) and Population Advice Notes (PAN). The traditional content of both series will still appear regularly.

The latest DMAG Briefings are:

DMAG 2003/1	Disabled people and the labour market	Lorna Spence
DMAG 2003/2	2001 Borough Demographic Profiles	Baljit Bains/Iryna Pylypchuk
DMAG 2003/3	2002 Round of Demographic Projections	John Hollis/Baljit Bains
DMAG 2003/4	Greater London Demographic Review: 2001	Baljit Bains/Iryna Pylypchuk
DMAG 2003/5	Census Information Note CIN 2003-1	Eileen Howes
DMAG 2003/6	Third country nationals living in London 2000/01	Lorna Spence
DMAG 2003/7	2001 Census Key Statistics: Initial summary of results	Eileen Howes
DMAG 2003/8	2001 Census Key Statistics: Household variables	John Hollis
DMAG 2003/10	Household Forecasts based on 2001 Census Key Statistics	John Hollis
DMAG 2003/11	2001 Census: Copyright and Licensing for Census users	Rachel Leeser/Hywel Davies
DMAG 2003/12	Women and the Labour Market	Lorna Spence
DMAG 2003/13	2001 Census Key Statistics: Means of travel to work	Eileen Howes
DMAG 2003/14	2001 Census Key Statistics: People, Families and Households	Rachel Leeser
DMAG 2003/15	Census Information Note CIN 2003-2	Eileen Howes
DMAG 2003/16	2001 Census Key Statistics: Health Indicators	Gareth Piggott
DMAG 2003/17	Public sector employment in London	Lorna Spence
DMAG 2003/18	Trade union membership in London	Lorna Spence

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