

Estimating fertility by ethnic groups

Sylvie Dubuc

sylvie.dubuc@sores.ox.ac.uk

- Acknowledgements:
 - This work supports a ESRC-UPTAP fellowship to S. Dubuc with D.Coleman as co-investigator



Introduction

- Fertility differs due to a number of social and cultural factors including ethnic characteristics (among others).
- Previous studies based on fertility rates by ethnic groups up to 2001
- Need to create / update existing rates, intercensuses rates

Introduction

- Aim of study:
 - OCM fertility rates estimates based on family unit, reversal survival calculations
 - Produce recent trends to test the hypothesis of fertility convergence between ethnic groups ?
 - Explore other factors possibly linked with ethnicity to explain fertility differential, including country of birth and religious affiliation

Introduction

- Conventional measure of fertility rate

$$\frac{\text{Number of births by women aged } x \text{ (birth registration)}}{\text{Total women of age } x \text{ (MYE)}}$$

- No birth statistics by ethnic (& religious) groups
 - Apart from ONS-LS: sample size problem
- Indirect data used
 - using census data (e.g. Large, Gosh and Fry, 2006; Rees, 2005, 2008),
 - GHS, LFS (Coleman and Smith, 2005)
- This study uses LFS data together with the Own Child Method to produce fertility estimates by ethnic groups from 1987 to 2006. Estimates by religion and CoB are also produced.
 - Ethnic, religious, CoB group of the mother only
 - Ethnic and religious groups 2001 census definition

Method

- Use of LFS (cross-sectional), 3rd quarter, yearly
 - Inconveniences:
 - may under-represent some groups (*increase margin of error*)
 - Sample size: small numbers for some groups
 - However, amalgamated LFS (2001 to 2006) provide a much larger sample size, (*reducing uncertainty in the data*)
 - Advantages:
 - Ethnic and religious variables available
 - Offer a relatively reliable source for inter-censuses estimates
 - Less risk of increasing (*systematic*) bias linked to under/over-estimated denominators in between censuses.

Own Child method

- Own Child method (Cho, Retherford and Choe, 1986),
 - Reverse survival technique (15 years) for estimating ASFR from cross-sectional survey
 - considerably increasing the sample size.
 - EasWesPop Program (East-West Center, USA)
 - Coleman and Smith, 2005

- Matching children to mothers
 - By family unit serial number/ household serial number
 - Relation to the Head of Family Unit/Head of Household

Own Child method

Serial H	Serial FU	RelHFU	RelHoH	Sex	Age
1114401001	11144010011	1	1	1	31
1114401001	11144010011	2	2	2	32
1114401001	11144010011	3	3	1	2
1114401001	11144010012	1	12	2	35
1114401001	11144010012	3	12	2	7

- Household/Family unit

- TFR White British 2001-2006:

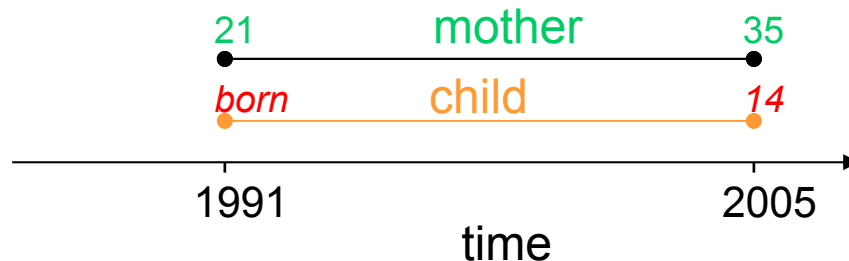
- Using HoH: 1.708

$\Delta=0.93\%$

- Using HFU: 1.724

Own Child method

- Retro-estimations of births to mothers by age up to 15 years backward
 - e.g. in 2005, a women aged 35 with a child 14 years old the child was born in 1991 when the women was 21.



Retro-correction for mortality figures

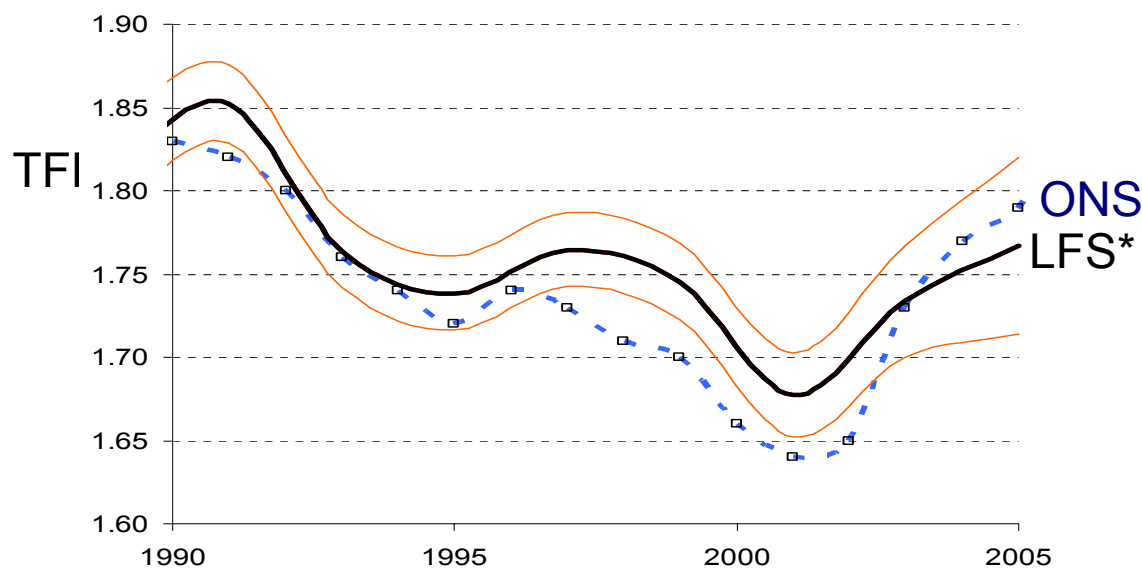
- Reversal survival table using England & Wales death rates from the ONS, by age and sex between 1986 and 2006.

- TFR White British 2004-2006:
 - No correction: 1.724
 - with correction: 1.73

$\Delta=0.35\%$

■ Total Period Fertility Rate (TFR)

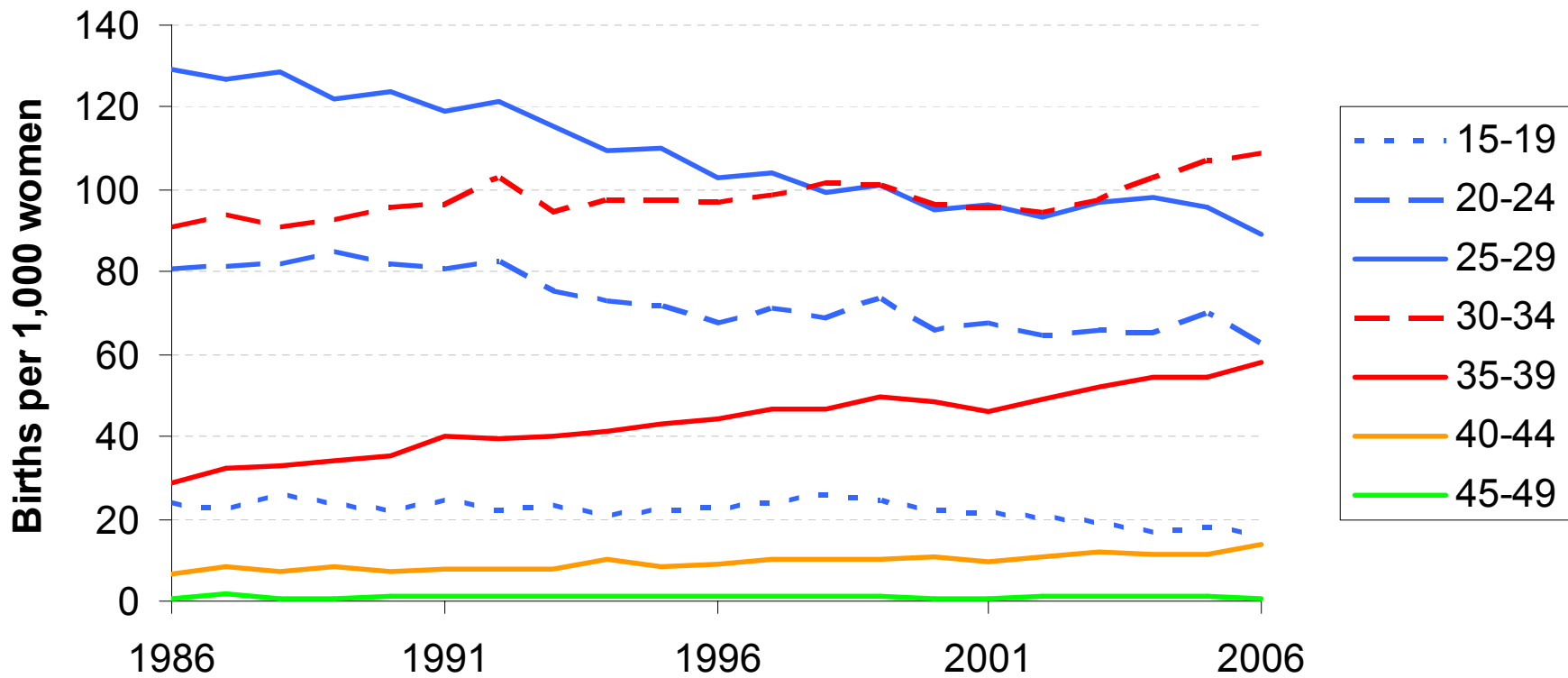
- General decreasing trend over the last 15 years
- A relative increase in the recent years



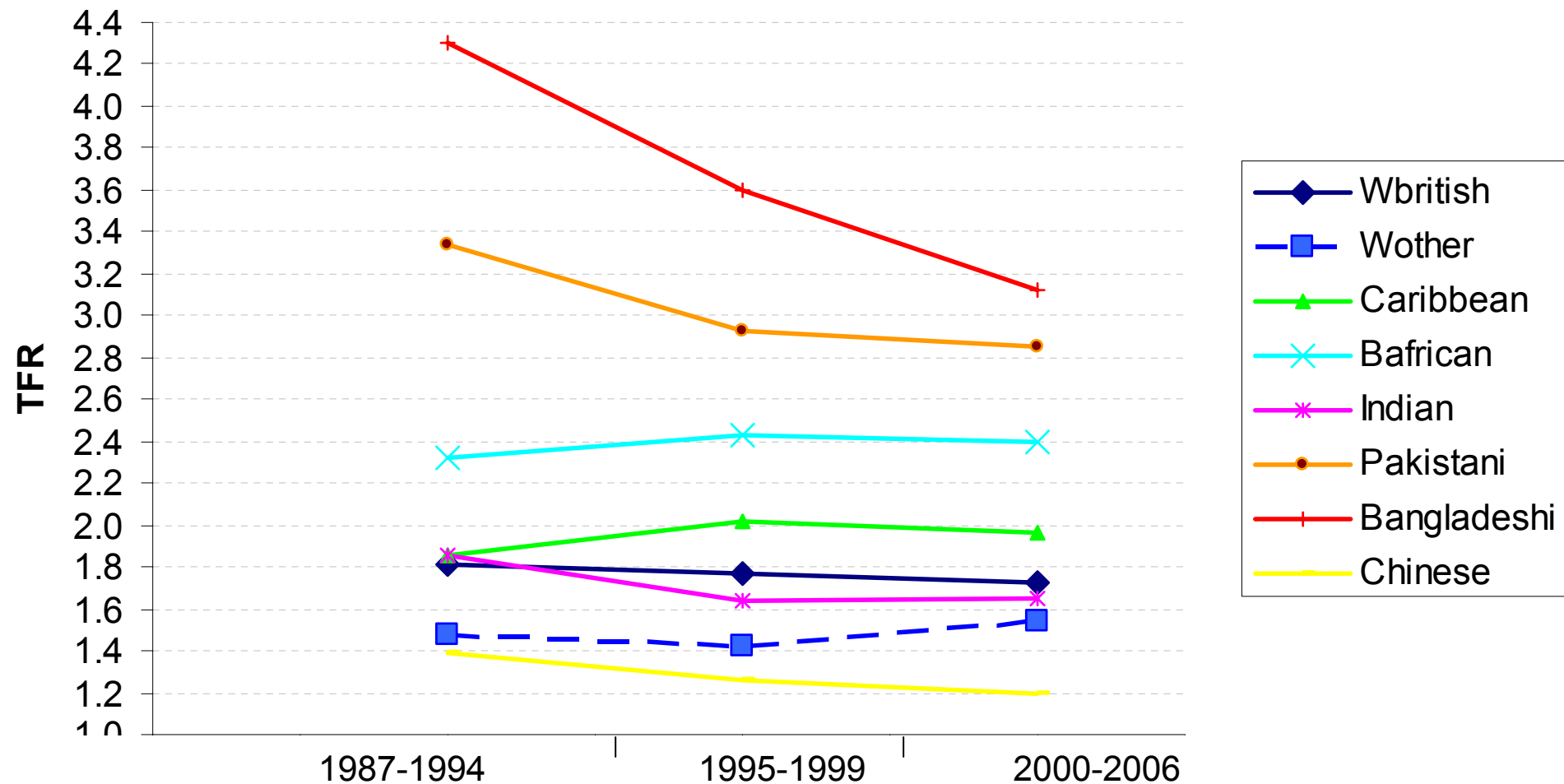
All women 15-49 years old, TFR 1986-2006

* 2 years average

Total Period Fertility Rate is the average number of children that women would have if they experienced the ASFRs for a particular year throughout their childbearing lives



5 years Age Specific Fertility rates for all women in the UK, 1986-2006



Total Period Fertility rate by ethnic group, 1987-2006

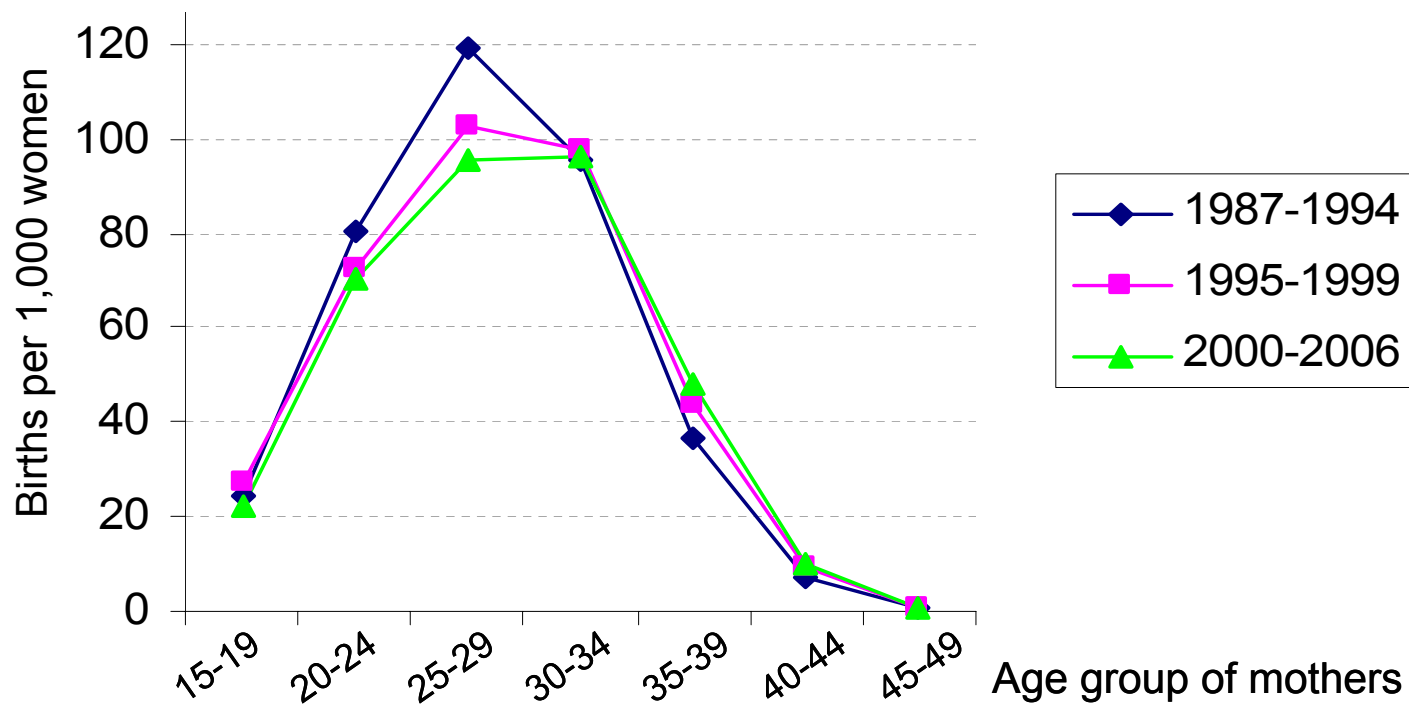
TFR of women of mixed origin

Group	Period	TFR	CI95% UL	CI95% LL
Mix-Africa	1987-2006	1.640	1.915	1.366
Mix-Asia	1987-2006	1.659	1.870	1.448
Mix-Carib	1987-2006	1.949	2.155	1.743
Mix-Other	1987-2006	1.460	1.668	1.251
Mix-Total	1987-2006	1.724	1.837	1.612

1987-2006 ALL UK TFR: 1.78

Delayed fertility

White British



5 years ASFR for White British women

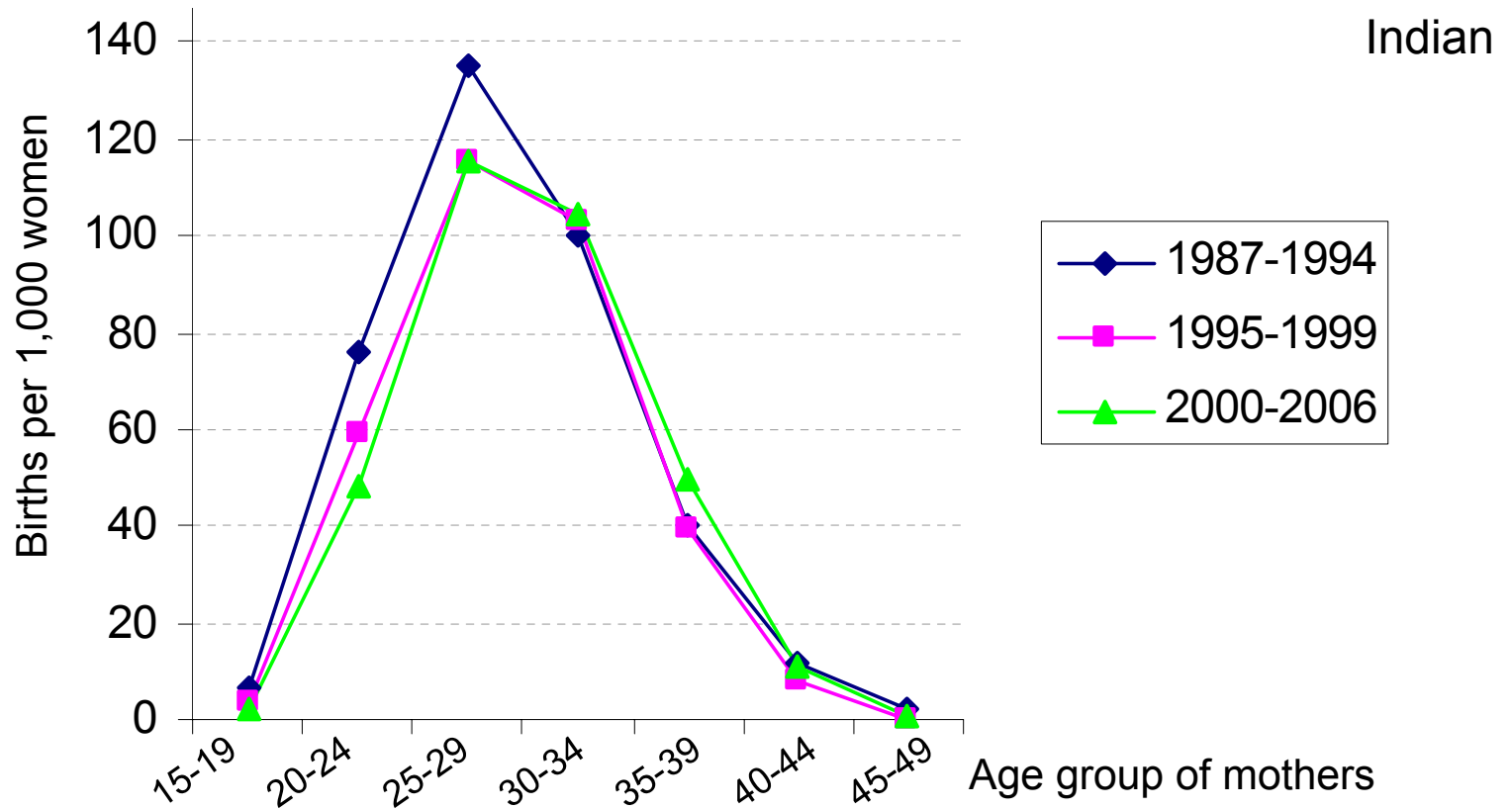
Delayed fertility

White Other



5 years ASFR for White Other women

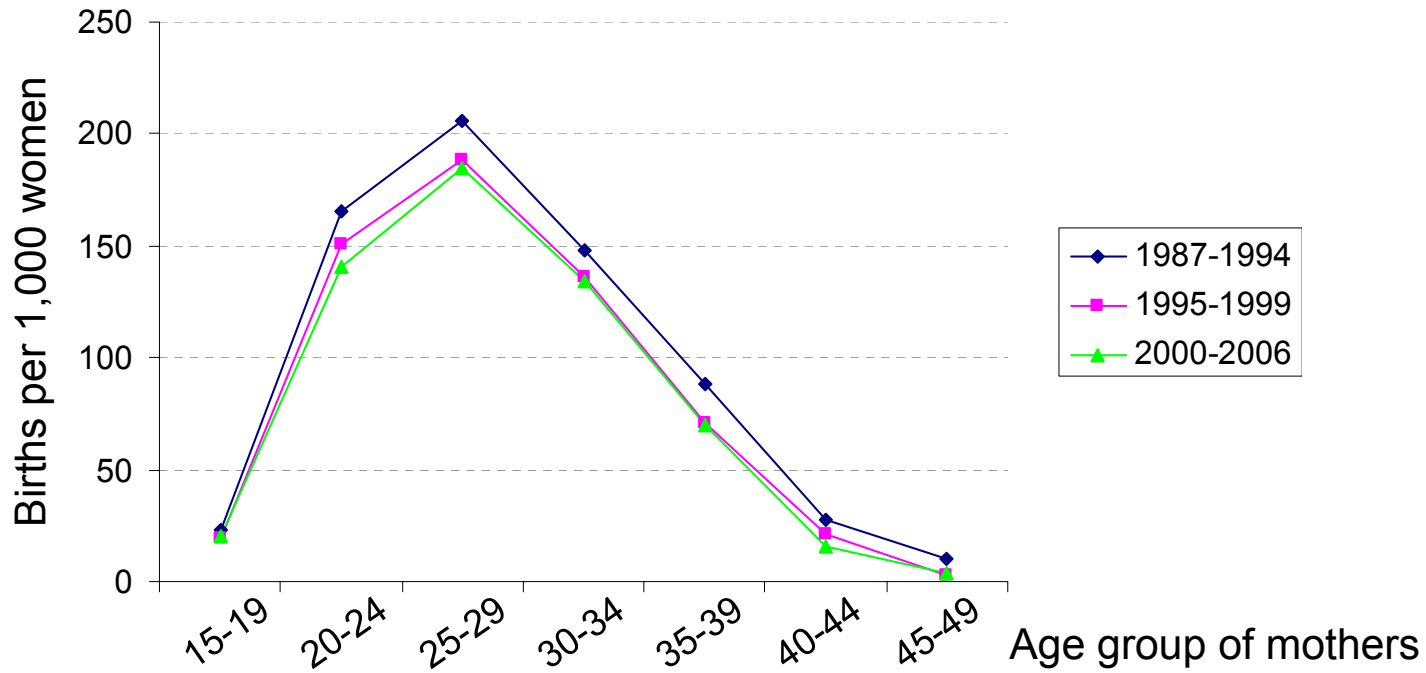
Delayed fertility



5 years ASFR for Indian women

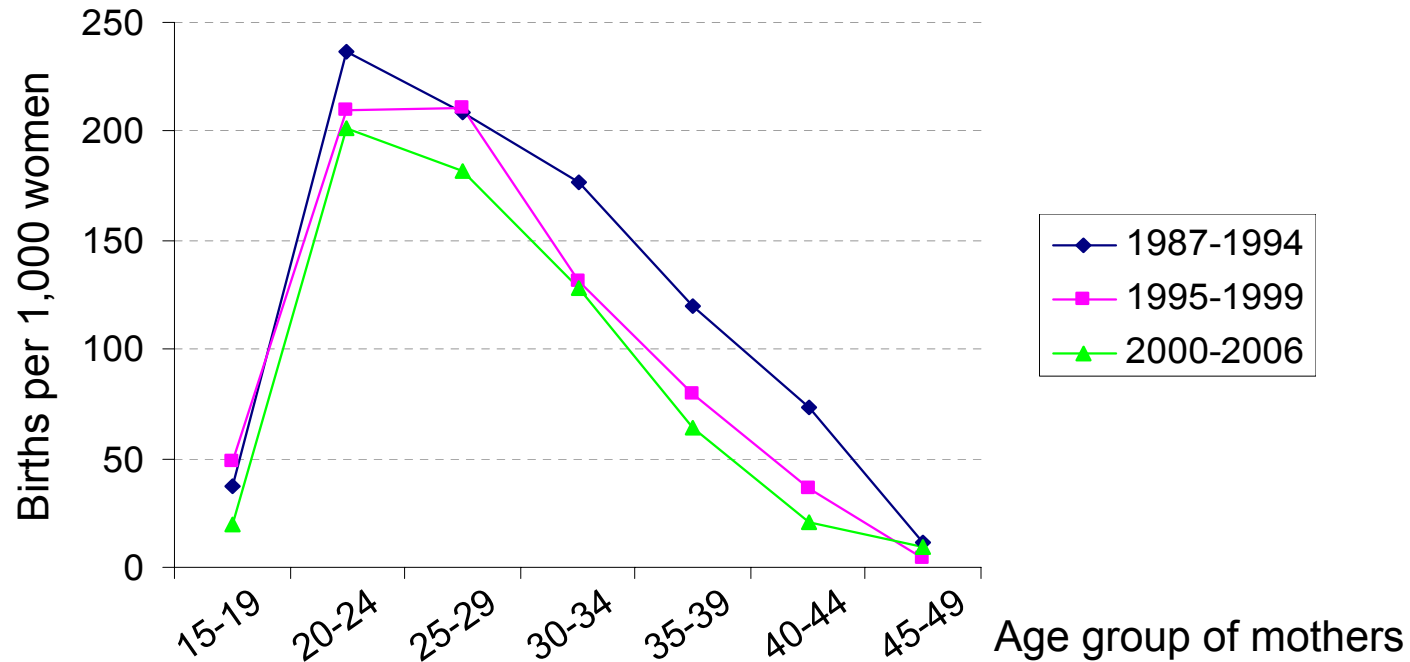
TFR reduction due to less children at all ages

Pakistani

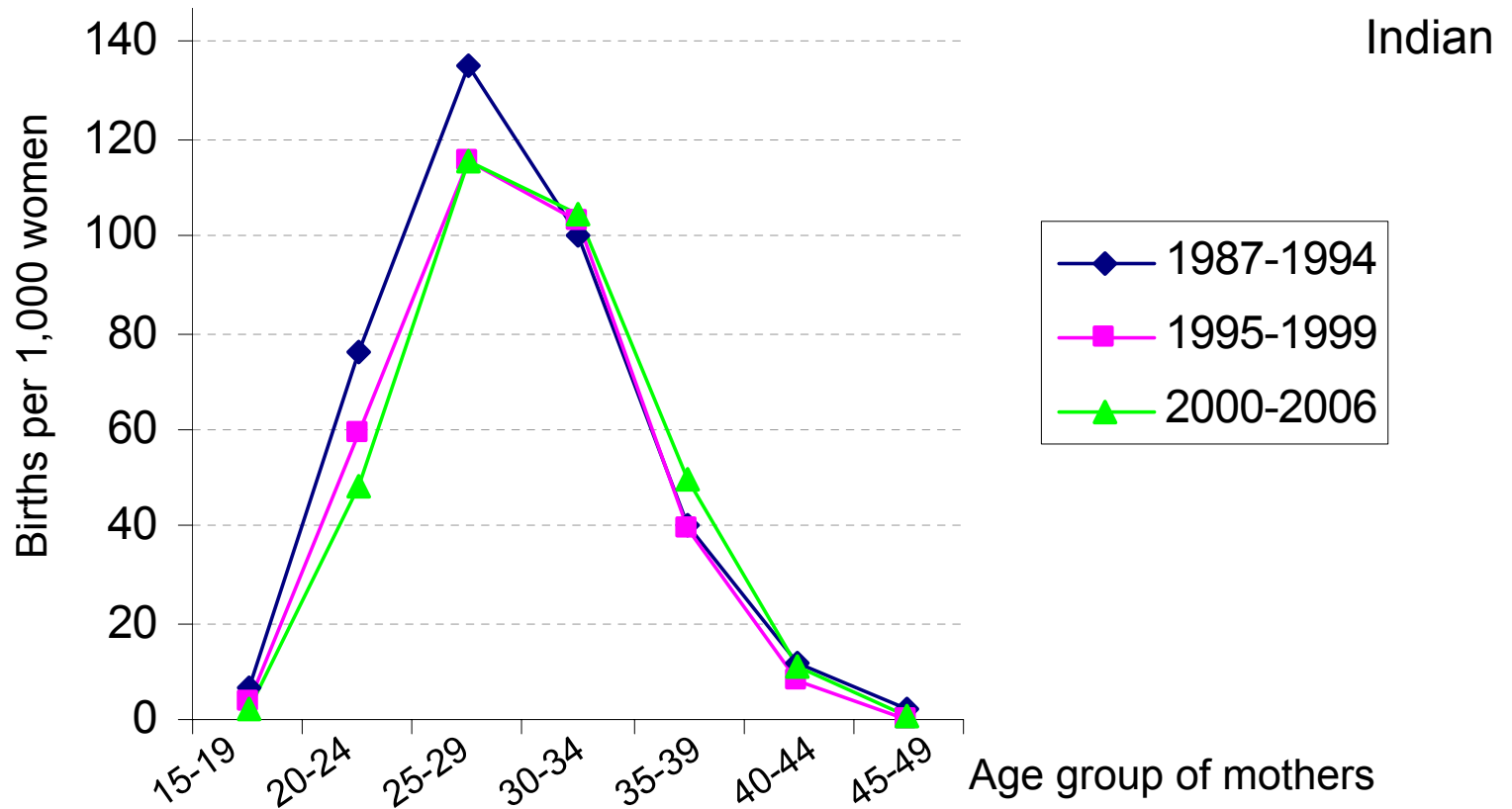


TFR reduction due to less children at all ages

Bangladeshi

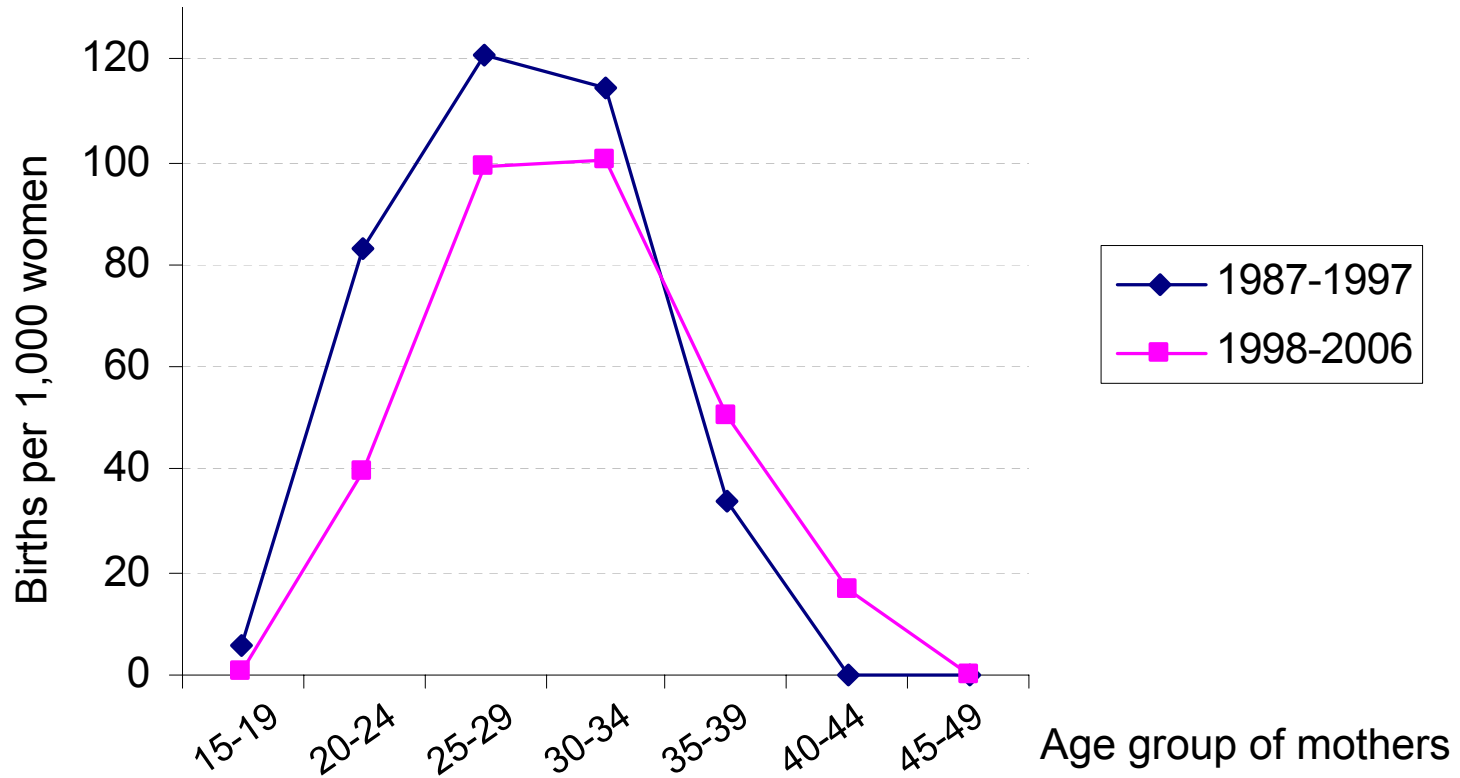


Delayed fertility



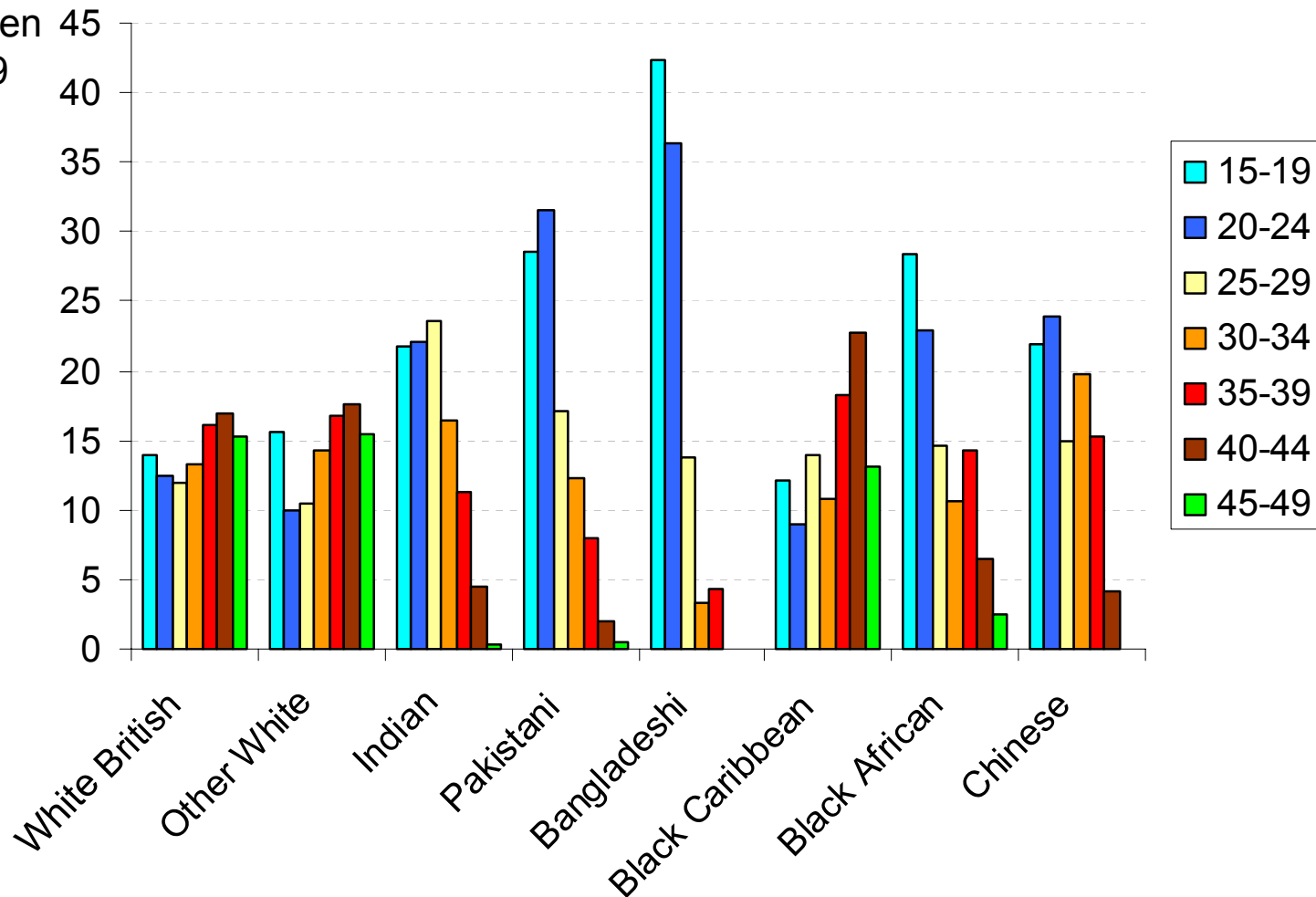
5 years ASFR for Indian women

Delayed fertility of the UK born...



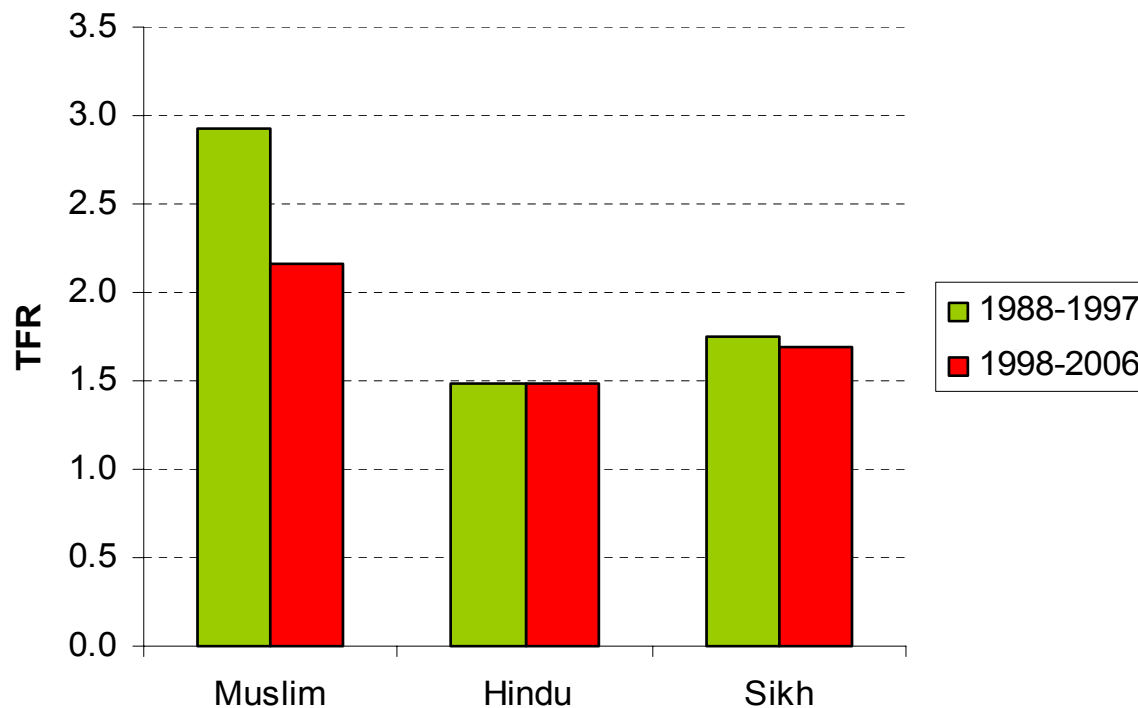
5 years ASFR for UK-born Indian women

% age group in
the total women
aged 15-49



UK-born women 15-49 years old by ethnic group in 2006

Average period TFR for Indian ethnic group by religious denomination*



*Only the main religious groups are represented

Period	All Muslim	Indian Muslim
1988-1997	3.01	2.93
1998-2006	2.94	2.17

Conclusion

- Improvement on the OCM based on family unit and reversal survival model including retro-correction for mortality, supporting the robustness of the method.
- Converging TFR between ethnic groups
- However TFR of the Pakistani and Bangladeshi are still at a relatively high level
- Delaying childbearing in the major groups have contributed to a relative increase of the UK TFR in recent years.
- Delaying childbearing is especially pronounced for the UK-born Indian compared to all Indian mothers.
- Ethnicity more than religion appears to influence TFR among the Indian group.