

Birth statistics: recent trends in England and Wales

Vera Ruddock, Rebecca Wood and Mike Quinn,
Demography and Health,
ONS

This article summarises recent trends in birth statistics in England and Wales. Particular attention is given to the characteristics of conceptions in 1996 and births in 1997, the latest years for which figures are available. The article examines changes in the number of births outside marriage, the age women become mothers and the number of women expected to remain childless throughout their lives. It also analyses differences in the timing of childbearing between women from different social classes or living in different regions of the UK. Finally it describes changes in the overall and underage conception rates between 1995 and 1996.

INTRODUCTION

During the past 10 years there have been many changes in the timing of childbearing and the structure of the family. Women are increasingly postponing entering motherhood until their late twenties or thirties when they have established themselves in their career¹. Many more women are giving birth in their early forties². This delay in childbearing is more common in women from the higher social classes who have the most to lose by interrupting their career to have children³. There are considerable regional differences in the timing of childbearing. These may reflect the social and economic characteristics of women living in different geographical areas^{4,5,6}.

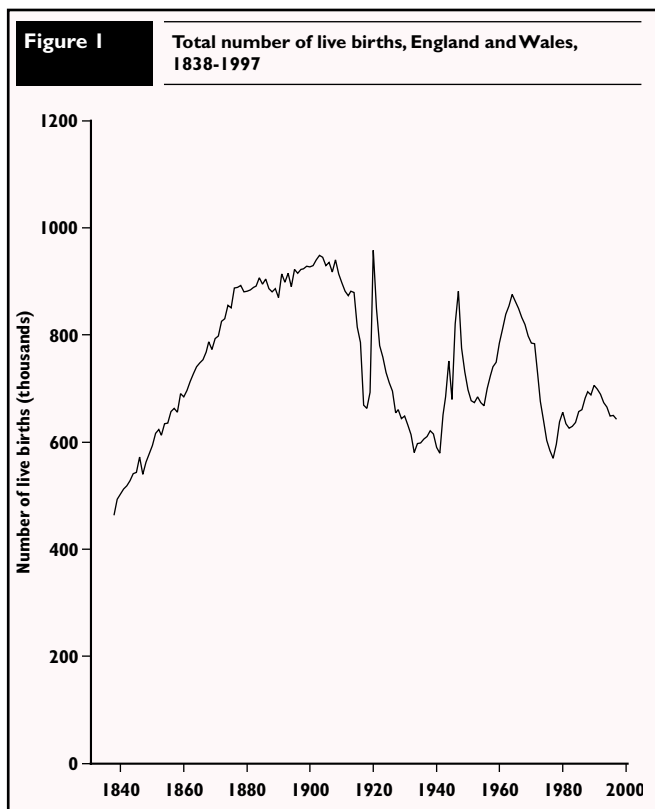
The decline in the popularity of marriage has led to an increase in the percentage of births outside marriage^{7,8}.

Teenage fertility rates in England and Wales remain high compared with other countries in Europe⁹ and a reduction in the teenage conception rate is one of the proposed local targets in the Government's Green Paper *Our Healthier Nation*.

This article describes in detail these recent important trends in birth statistics in England and Wales. It focuses on statistics for births occurring in 1997 and conceptions which occurred in 1996. The article replaces and updates the commentary that used to appear in the annual reference volume on birth statistics. The most recent title in the series *1997 Birth Statistics*, FM1 no. 26, was published in early December 1998.

NUMBERS OF BIRTHS

There were 642 thousand live births in England and Wales in 1997, a decrease of 1.1 per cent compared with 649 thousand in 1996.

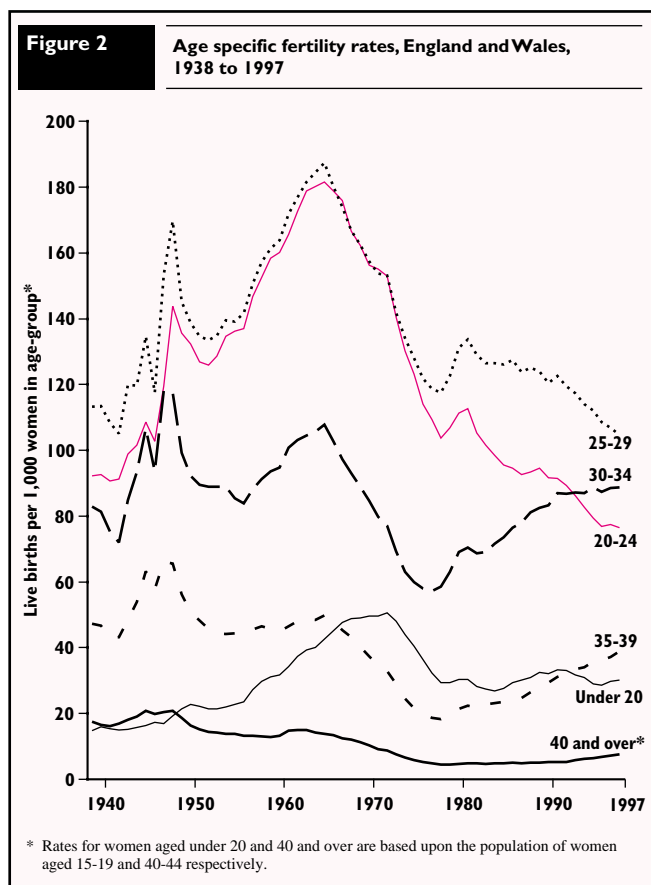


The number of births has fluctuated during the twentieth century with very sharp peaks at the end of both world wars (Figure 1). In the past 15 years, the number of births has been more stable, peaking at 706 thousand in 1990.

TIMING OF CHILDBEARING

The most dramatic change in fertility in England and Wales over the past 20 years has been a shift towards later childbearing. Fertility amongst women in their thirties and early forties has been rising; at the same time, fertility for women in their twenties has been falling with rates in women aged 20–24 falling more than in those aged 25–29 since the early 1970s (Figure 2). Twenty years ago, women in their late twenties had twice the fertility rate of women in their early thirties; by 1997 the fertility rate for the 25–29 age group was just 18% higher than the rate for women aged 30–34. Women aged 25–29 still have the highest fertility rates, but women are now more likely to become mothers in their early thirties than in their early twenties. In addition women aged 35–39 now have higher fertility than women in their teenage years.

The mean age of mothers in 1997 was 28.8, more than two years older than it was twenty years ago (Table 1). Women are waiting



until they are older before starting a family: the mean age of mothers at the birth of a first child also increased by about two years from 24.3 years in 1976 to 26.8 years in 1997. The greatest increase in the mean age of mothers at first birth has been for births inside marriage. Married women who gave birth to their first child in 1997 were on average 29.0 years old, four years older than in 1976. This may partly reflect the increase in the mean age of women at first marriage from 22.8 years in 1976 to 27.2 years in 1996.

FAMILY SIZE

Changes in family size have a long term impact on the population structure, and estimates of the average number of children which will be born to women contribute to estimates of the size of the population in the future. An average family size of 2.1 children per woman is needed to maintain the population at its current size if mortality rates are constant and there is no net migration¹⁰. There are two ways to estimate family size: cohort analysis; and period analysis using the total period fertility rate¹¹.

Table 1 Mean age of mother at childbirth, England and Wales, 1976-1997

Year	All births	Inside Marriage	Outside Marriage	First births*	Second births*	Third births*	Fourth births*
1976	26.4	26.7	23.3	24.3	26.6	28.6	30.1
1981	26.8	27.3	23.5	24.6	27.1	29.3	30.5
1986	27.0	27.9	23.8	24.9	27.4	29.2	30.7
1991	27.7	28.9	24.9	25.7	27.9	29.8	31.0
1994	28.4	29.6	25.8	26.5	28.6	30.3	31.2
1995	28.5	29.8	26.0	26.7	28.8	30.5	31.2
1996	28.6	30.1	26.1	26.7	29.0	30.6	31.4
1997	28.8	30.3	26.2	26.8	29.2	30.8	31.6

* Includes children born inside and outside marriage.

Cohort Analysis

Cohort analysis compares the childbearing patterns of women born in different years. However, the average family size of a cohort of women can only be calculated when the women have reached the end of their childbearing years.

The cohort analyses confirm the change in the timing of childbearing suggested by the increasing mean age at first birth. Women born in 1967 had had on average about half a birth less by the age of 30 than those born in 1947 (Table 2). Whilst these younger women may 'catch up' on childbearing in their thirties, it seems likely that these younger cohorts will show a decrease in completed family size compared with earlier cohorts.

The average completed family size – the average number of children per woman by age 45 – has also changed over the last 20 years (Table 2). Women born in the late 1930s, who were in their late twenties during the 1960s baby boom, had the largest families with an average of 2.4 children per woman. Since then average family size has fallen to below 2.1 children per woman for the 1952 cohort — the same as for the 1922 cohort.

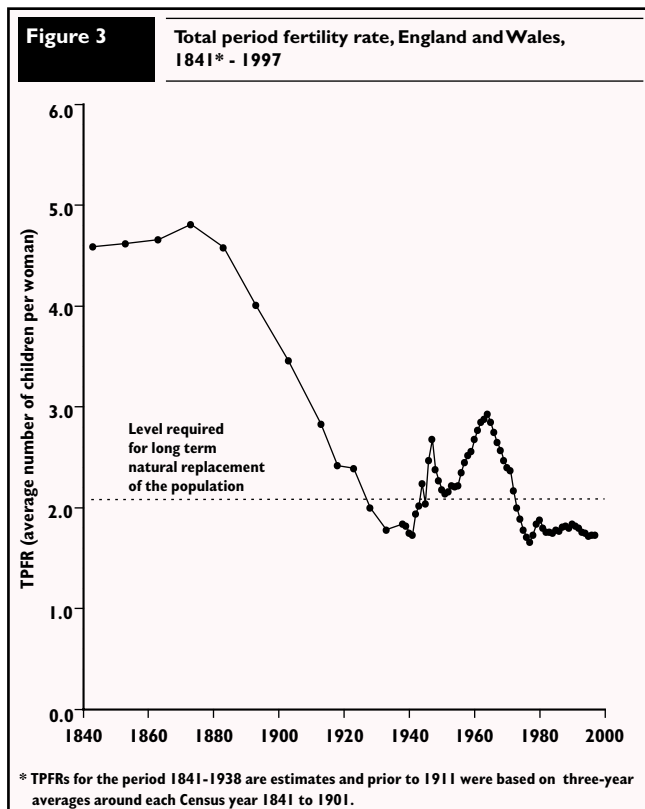
Part of this decline in fertility may be due to an increasing proportion of childless women. Around 18 per cent of women born in 1922 were childless by the age of 45 (Table 3). This proportion fell to under 12 per cent of women born in the 1940s who would have been of childbearing age during the 1960's baby boom. The proportion of childless women is projected to increase to around 23 per cent of women born in 1972. Some of these women may choose to be childless whereas others may be unable to have children¹².

Year of birth of woman	Age of woman (completed years)					
	20	25	30	35	40	45*
1922	0.14	0.79	1.44	1.82	2.01	2.05
1927	0.17	0.87	1.55	1.97	2.17	2.20
1932	0.19	0.96	1.73	2.17	2.32	2.34
1937	0.23	1.13	1.95	2.29	2.37	2.39
1942	0.31	1.27	1.96	2.19	2.27	2.29
1947	0.34	1.14	1.71	1.98	2.06	2.08
1952	0.36	0.99	1.60	1.91	2.03	2.05
1957	0.27	0.88	1.49	1.85	1.99	
1962	0.22	0.76	1.36	1.74		
1967	0.21	0.71	1.27			
1972	0.22	0.64				
1977	0.22					

* Includes births at ages 45 and over, achieved up to the end of 1997.

Women born in	Age			Approx. end of childbearing
	25	35	45	
1922	48	20	18	1967
1927	45	18	16	1972
1932	43	15	13	1977
1937	37	13	12	1982
1942	33	12	11	1987
1947	37	14	12	1992
1952	45	18	16	1997
1957	51	21	17	2002
1962	58	25	21	2007
1967	61	29	22	2012
1972	63	29	23	2017

Figures above the stepped line represent actual events which occurred up to the end of 1997. Figures below the line incorporate projected births from 1998 onwards. Projected births are calculated using the Government Actuary's Department principal 1996-based projection.

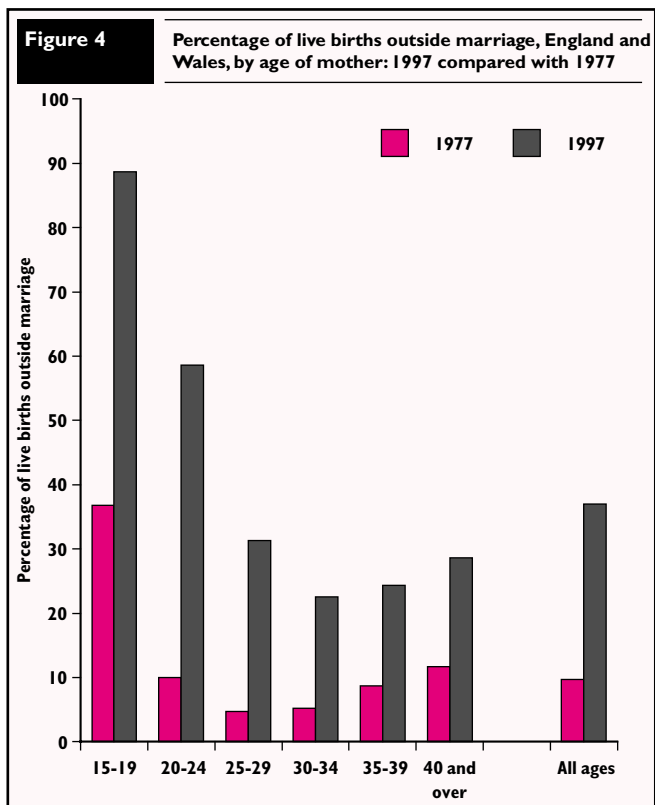


Period analysis using the total period fertility rate

Period analysis can be used to examine the fertility of women of all ages at a given point in time ; there is no requirement to wait until the women have completed childbearing. The total period fertility rate (TPFR) is the number of children that would be born to a woman if current patterns of fertility persisted throughout her childbearing life. It is, of course, a hypothetical measure as fertility does not normally remain stable for 30 years, the childbearing lifespan of a woman. As a result the TPFR tends to fluctuate more over time than the average completed family size calculated by cohort analysis. The TPFR in 1997 was 1.73 children per woman, the same level as in 1996. Figure 3 shows that the TPFR has remained fairly stable throughout the 1980s and 1990s, well below the level of 2.1 required for long term natural replacement of the population. There have been two major peaks in the TPFR since the 1920s: during the baby boom following the Second World War; and in the 1960s when the TPFR reached almost 3 children per woman. The TPFR can overestimate completed family size when fertility rates are increasing in younger women, as in the mid-1960s: the completed family size based on cohort analyses for women born in the late 1930s showed that these women eventually had an average of only 2.4 children. Conversely, when fertility is increasing in older women, as in the 1990s, the TPFR may underestimate the average number of children which will be born to each woman.

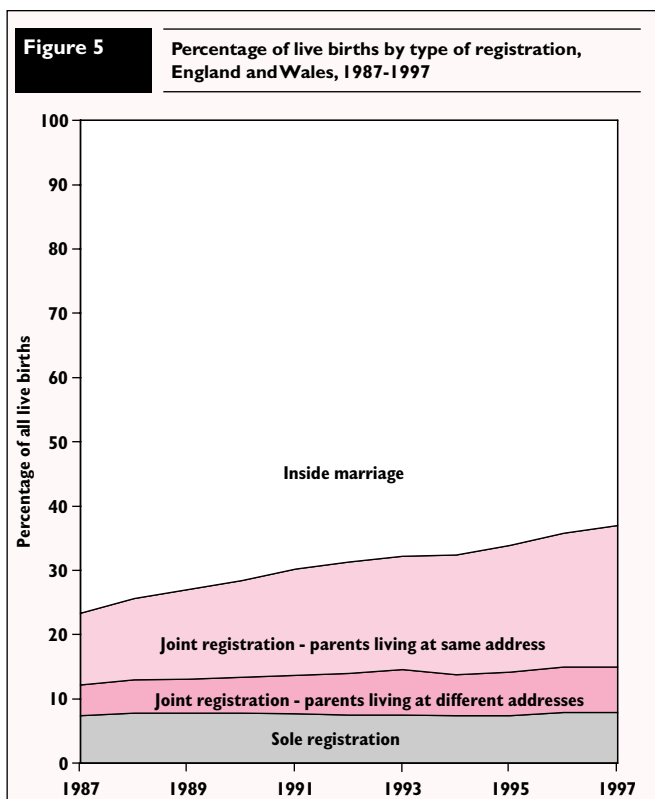
BIRTHS INSIDE AND OUTSIDE MARRIAGE

Over the past twenty years there have been dramatic increases in all age groups in the proportion of births occurring outside marriage (Figure 4). In 1977 only 10 per cent of live births occurred outside marriage; by 1997, 37 per cent of children were born to unmarried parents. Across the age groups, the proportion of births outside marriage has always been highest for teenagers, and in 1997 stood at 89 per cent. The greatest proportional increase in



births outside marriage since 1977 was the roughly six fold increase for women in their twenties.

Most of the increase in the number of births outside marriage since 1987 has been to cohabiting couples — that is, parents living at the same address (Figure 5). In 1997, 79 per cent of births outside marriage were registered by both parents. Three quarters of these parents were living at the same address. The proportion of births registered solely by the mother has remained steady over the past decade at around 7 to 8 per cent of all live births. In 1997, the



highest proportion of sole registrations – 29 per cent – was for women aged under 20; this compares with only 4 per cent of births to women in their late thirties or early forties.

SOCIAL AND GEOGRAPHICAL VARIATIONS

National fertility rates conceal wide social and geographical variations in the timing of childbearing.

Fertility and social class

The occupation of the father is recorded at birth registration and can be used to define his social class. Since the mother’s occupation is frequently not recorded at birth registration¹³, and it is therefore often not possible to assign her a social class based on her own occupation, the social class of her husband is used to examine differences in the age of mothers at their first birth within marriage. Mothers with husbands in social classes I & II tended to have children at older ages than women with husbands in manual occupations. During the last decade the mean age of mothers at their first birth within marriage increased among mothers from all social classes (Figure 6). However, the gap between social classes I & II and social classes IV & V in the mean age of women at their first birth within marriage has been shrinking. In 1987, women in social classes I & II were on average 3.9 years older than those in social classes IV & V when they had their first child within marriage. By 1997, this difference had fallen to 2.6 years — the mean age of women at their first birth within marriage was 30.2 years in social classes I & II and 27.6 years in social classes IV & V.

There is also considerable variation in the number of births to teenage mothers from different social backgrounds. As 29% of teenage births are registered solely by the mother, we cannot easily compare the social class of children born to mothers in different age groups. Measures of the level of deprivation in an administrative area can, however, be used to compare the extent of teenage motherhood in areas with different socio-economic

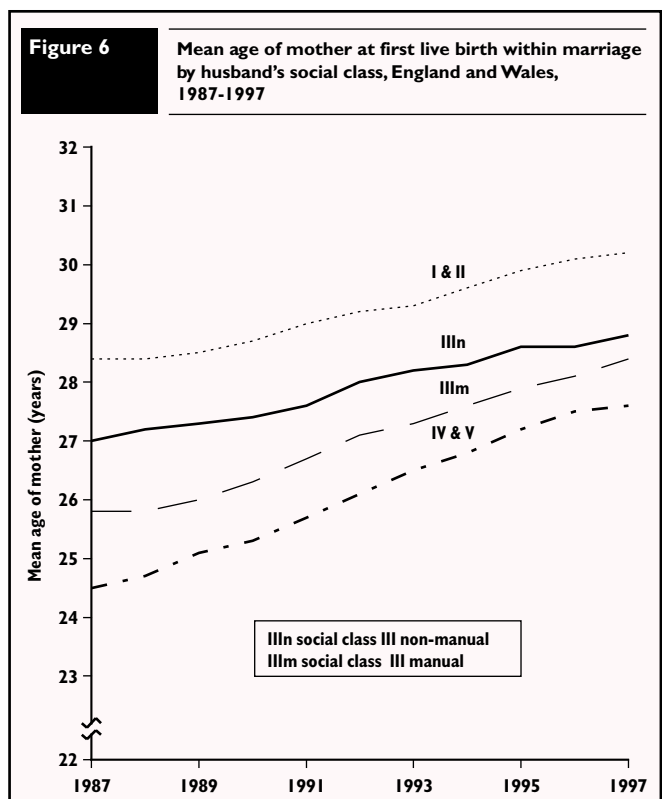


Table 4 Live births (numbers and rates by age of mother), total period fertility rate, and percentage of births outside marriage, by area of usual residence, 1997, United Kingdom

Government Office Region	Number of births (thousands)		Age specific fertility rates							Total period fertility rate	Percentage of births outside marriage
	1996	1997	all ages	Under 20	20-24	25-29	30-34	35-39	40 and over		
North East	30	29	55	41	83	102	74	28	5	1.66	46
North West and Merseyside	85	83	59	35	85	105	82	34	6	1.74	43
Yorkshire and Humberside	62	60	59	36	86	111	78	31	6	1.74	39
East Midlands	49	48	57	31	75	106	83	33	6	1.67	38
West Midlands	68	67	62	35	89	113	85	35	7	1.82	37
Eastern	65	65	60	24	73	101	96	40	8	1.71	32
London	105	105	64	26	67	100	95	53	13	1.76	35
South East	95	95	59	23	64	98	99	44	8	1.68	31
South West	55	55	58	25	70	107	91	38	7	1.69	35
England	614	607	60	30	76	104	89	39	7.7	1.72	37
Wales	34.9	34.5	61	38	91	114	82	33	5.8	1.82	43
Scotland	59.3	59.4	54	31	66	97	84	34	5.5	1.57	38
Northern Ireland	24.6	24.3	68	29	72	122	108	47	9.2	1.93	27

Note : the rates for all areas except England and Wales have been calculated using 1996 populations and will need to be updated before publication.

characteristics. The Carstairs index¹⁴ is a measure of deprivation based on a number of variables from the 1991 census. This index was used to create five groups of local authorities ranging from the least to the most deprived areas. In the most deprived local authorities 12% of all live births in 1994-96 were to teenagers, compared with only 2% in the least deprived areas¹⁵. This complements earlier analyses using the ONS classification of local areas which showed that teenage pregnancy rates in 1994 were highest in local authorities in the manufacturing, ports and industry and coalfields groups and lowest in the most prosperous areas group⁴.

Fertility patterns within the UK

There were some differences in the birth statistics for the four constituent parts of the United Kingdom. From 1996 to 1997 the number of live births fell in England, in Wales and in Northern Ireland, but rose very slightly in Scotland (Table 4).

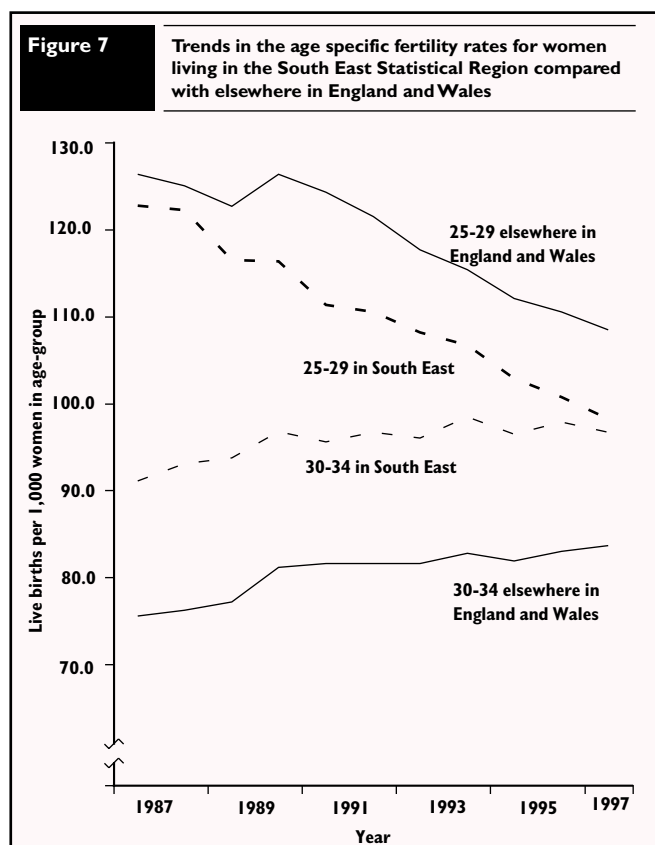
The highest TFR occurred in Northern Ireland (1.93 children per woman), which also had the lowest proportion of births occurring outside marriage (27 per cent). Scotland had the lowest TFR (1.57) and Wales the highest proportion of births occurring outside marriage (43 per cent).

In England, the North East had the lowest TFR (1.66) and the West Midlands the highest (1.82) (Table 4). The proportion of live births outside marriage was highest in the North East (around 46 per cent) and lowest in the Eastern and South East Government Office Regions (around 32 per cent).

There was considerable variation in fertility in different age groups across England and Wales in 1997. In the South East women aged 30-34 had similar fertility rates to women aged 25-29, the age group with the highest rates in other areas (Table 4). Although the fertility rate in the 25-29 age group has fallen over the past 10 years throughout England and Wales, it has fallen more in the South East than elsewhere (Figure 7). Also the fertility rate among women aged 30-34 in the South East Standard Statistical Region which had increased in parallel with the national rate, was 16% higher than elsewhere in England and Wales.

Fertility by country of birth of mother

It is not possible to analyse differences in the fertility of women from different ethnic groups living in England and Wales because



mother's ethnic group is not recorded at birth registration. However the mother's country of birth is recorded, and can be used to describe the fertility of first generation immigrants to England and Wales. In 1997, 13 per cent of all births in England and Wales were to mothers born outside the United Kingdom (Table 5). Women born in the New Commonwealth (ie all Commonwealth countries except Australia, Canada, New Zealand and the Republic of South Africa) had much higher fertility rates at all ages than those born in the United Kingdom. Women aged under 30 had particularly high rates — in the 20-24 age group, the fertility rate for women born in the New Commonwealth was three times that for women born in the United Kingdom. For women born in the New Commonwealth the early twenties was the peak age for childbearing, whereas among women born in the United Kingdom the 25-29 age group had the highest fertility rates. Women born in the rest of the world had similar fertility rates to those born in the United Kingdom at ages under 25 years, but higher rates among older women. As a

Table 5 Number of births and age specific fertility rates for women born in the UK, in the New Commonwealth and the rest of the world England and Wales, 1997

Country of birth of mother	Number of births (thousands)	All ages							Total period fertility rate
		All ages	Under 20	20-24	25-29	30-34	35-39	40-44	
United Kingdom	558	57	30	72	100	86	36	6	1.65
Outside UK	84	85	33	124	150	116	61	14	2.49
New Commonwealth	46	97	48	206	172	115	60	15	3.09
Rest of the world	39	74	24	71	131	117	61	13	2.09

result, women born in the New Commonwealth had the highest total period fertility rate (3.09), women born in the rest of the world the next highest (2.09) and women born in the United Kingdom the lowest (1.65). More detailed data on the fertility rates of women born in different countries and trends in those rates are presented in *1997 Birth Statistics FMI no.26*.

CONCEPTIONS

The estimated number of conceptions in England and Wales in 1996 was 816 thousand, a rise of 26 thousand (3.3 per cent) compared with 1995 (Table 6). This was the first annual rise since the peak in conceptions in 1990. The overall conception rate also rose (by 2.3 per cent) from 74 to 76 conceptions per thousand women aged 15–44 (see Table 12, page 56). The conception rate rose in all age groups. Before 1996, the conception rate had been falling among women aged under 30, but rising in older women as more women delayed starting a family.

One possible reason for the rise in the conception rate among younger women was that in October 1995, a warning was issued by the Committee on Safety of Medicines that seven brands of contraceptive pill carried a higher risk of thrombosis than other pills; this received considerable attention from the media. At the time, public health professionals expressed concern that this 'pill scare' would result in an increase in unplanned pregnancies. Quarterly conception data before and after October 1995 have been used to investigate this hypothesis and it has been shown that conception rates rose in the December 1995, March and June 1996

quarters compared with earlier years¹⁶. If the rise in conception rates were due to the pill scare we would expect the rates to fall as more women again began to use reliable methods of contraception. Data for the December quarter in 1996 and provisional data for the first two quarters of 1997 are now available. They show that conception rates in women in their twenties were indeed lower in the March and June quarters of 1997 than in the corresponding quarters of 1996, but have not returned to their pre October 1995 levels. It may be that the pill scare is still affecting conception rates, or that the rates have been influenced by some other (unknown) factors.

Pill usage is much less common in women in their late thirties than in younger women; in a survey in November 1995, only 10 per cent of women aged 35 and over reported using the pill compared with 36 per cent of women aged 16 to 24¹⁶. The rise in conception

Box

Conception statistics include pregnancies that result in one or more live or still births, or a legal abortion under the 1967 Act. Conception statistics do not include miscarriages or illegal abortions. Dates of conception are estimated using recorded gestation for abortions and stillbirths, and assuming 38 weeks gestation for live births.

Table 6 Outcome of conceptions* inside and outside marriage by age of woman at conception and year of conception, 1985-1996

	Residents of England and Wales											
	All ages				Under 20				Under 16			
	1985	1990	1995	1996	1985	1990	1995	1996	1985	1990	1995	1996
All conceptions												
Percentage leading to:												
maternity	82	80	80	79	66	64	65	63	44	49	50	48
legal abortion	18	20	20	21	34	36	35	37	56	51	50	52
Base (000s)	797.2	871.5	790.3	816.0	119.3	115.1	86.2	94.4	9.4	8.6	8.0	8.8
Conceptions inside marriage												
Percentage leading to:												
maternity	93	92	92	92	96	95	94	94	:	:	:	:
legal abortion	7	8	8	8	4	5	6	6	:	:	:	:
Base (000s)	513.7	494.4	417.7	415.7	18.3	11.3	6.5	6.3	:	:	:	:
Conceptions outside marriage												
Percentage leading to:												
maternity outside marriage registered by mother alone	17	14	13	13	20	19	19	18	24	25	23	22
maternity outside marriage registered by both parents	32	41	47	47	9	37	40	40	18	24	27	26
maternity inside marriage	15	9	7	6	13	6	3	3	2	1	1	1
legal abortion	37	36	33	34	39	39	38	39	56	51	50	52
Base (000s)	283.5	377.1	372.5	400.2	101.0	103.8	79.7	88.0	9.4	8.6	8.0	8.8

* Conceptions leading to maternity or legal abortions - those which result in spontaneous miscarriage are not included.

Note: Percentages may not add to 100 because of rounding.

rates in older women in 1996 is therefore less likely to be due to the pill scare than the rise in younger women. Conception rates in women aged 35 and over did not fall in March and June 1997.

Slightly more than 79 per cent of conceptions resulted in a maternity, 1 per cent less than in 1995. In 1996, the estimated number of conceptions leading to a maternity rose by 2 per cent to 646 thousand from 634 thousand in 1995. The number of conceptions leading to abortion rose by 9 per cent to 170 thousand. Analysis of quarterly data suggests that some of this rise may have been caused by the pill scare¹⁶.

Less than one in six conceptions in women aged 25–34 were terminated by an abortion compared with over one third of conceptions to teenagers and to women aged 40 and over. During the last ten years the proportion of conceptions terminated by abortion has increased for teenagers and women in their twenties. It has decreased for women aged 35 and over; this might be due to an increase in planned conceptions among older women.

Underage conceptions

The estimated number of conceptions in girls aged under 16 in England and Wales increased by 10 per cent between 1995 and 1996 to 8.8 thousand (Table 6). Over 70 per cent of these conceptions were to girls aged 15. The proportion of underage conceptions terminated by abortion rose from 50 per cent in 1995 to 52 per cent in 1996.

The underage conception rate rose by 11 per cent to 9.4 conceptions per thousand girls aged 13–15, compared with 8.5 per thousand in 1995 (Table 12, page 56). This compares with an increase of 2.4 per cent between 1994 and 1995. It is possible that some of the 11 per cent rise between 1995 and 1996 was caused by the pill scare.

Key findings

- There were 642 thousand live births in England and Wales in 1997, 1.1 per cent fewer than in 1996.
- It is estimated that about 23 per cent of women born in 1972 will be childless when they are 45.
- 37 per cent of births in 1997 occurred outside marriage; 79 per cent of these births were registered by both parents.
- In England and Wales the highest fertility rates were among women aged 25–29, although in the South East the rate among women aged 30–34 was similar.
- There were 816 thousand conceptions in England and Wales in 1996, 26 thousand more than in 1995. 21 per cent of these conceptions led to an abortion, 1 percentage point more than in 1995. Some of these increases may have been caused by the pill scare in October 1995.
- The underage conception rate rose by 11 per cent to 9.4 conceptions per thousand girls aged 13–15, compared with 8.5 per thousand in 1995. Over 70 per cent of these conceptions were to 15 year old girls.

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