

EC 262P: Population Economics
Spring 2006

Trends in Fertility and Fertility-Related Behaviors

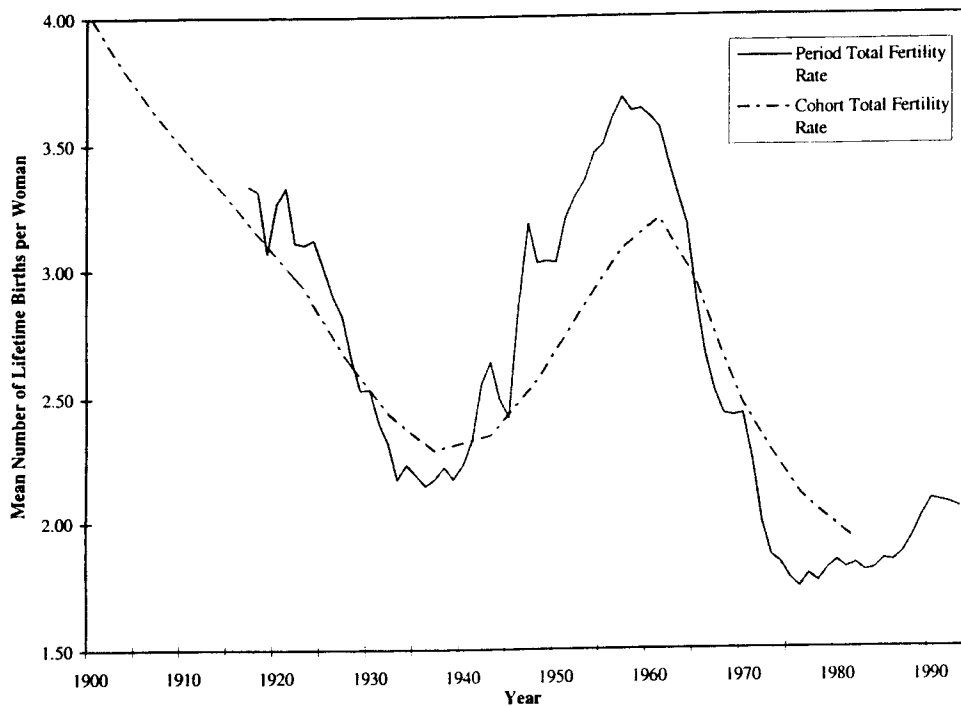


Fig. 1. Period and cohort total fertility rates in the US, 1900–1993. Source: NCHS, *Vital Statistics for the US*, selected years.

The (*period*) *total fertility rate* for year t is given by:

$$TFR_t = \sum_{a=15}^{44} f(a, t).$$

where $f(a, t)$, the (*age-specific*) *fertility rate* of women age a in time period t , is given by

$$f(a, t) = \frac{\text{Number of births in year } t \text{ to women of age } a}{\text{Number of women of age } a \text{ in year } t}.$$

The TFR_t is a measure of fertility that summarizes the rate of childbearing in a given period of time, often a year. The TFR is a hypothetical measure of completed fertility for a *synthetic cohort* of women assumed to pass through life bearing children according to the age-specific birth rates in a given period. Thus, the TFR may be interpreted as the average number of lifetime births women may be expected to have if they bore children at the rates that women of all ages did in the given year or other period.

The *cohort total fertility rate* for women in the cohort born in year c is given by:

$$TFR_c = \sum_{a=15}^{44} f(a, c + a)$$

Cohort fertility refers to the fertility of the same women at successive ages. *Cumulative birth rates* are sums of *central birth rates*—i.e., the number of births occurring to women in birth cohort c at age a divided by the number of women of age a in birth cohort c —for specified cohorts and show the number of children ever born up to the indicated age.

In Figure 1 of Hotz, Klerman and Willis (1997), the cohort TFR_c is displayed in the year that the birth cohort c attained its *mean age of fertility*, where the mean age of fertility for the c^{th} birth cohort is given by:

$$A_c = \sum_{a=15}^{44} a \cdot \frac{f(a, c + a)}{\sum_a f(a, c + a)}.$$

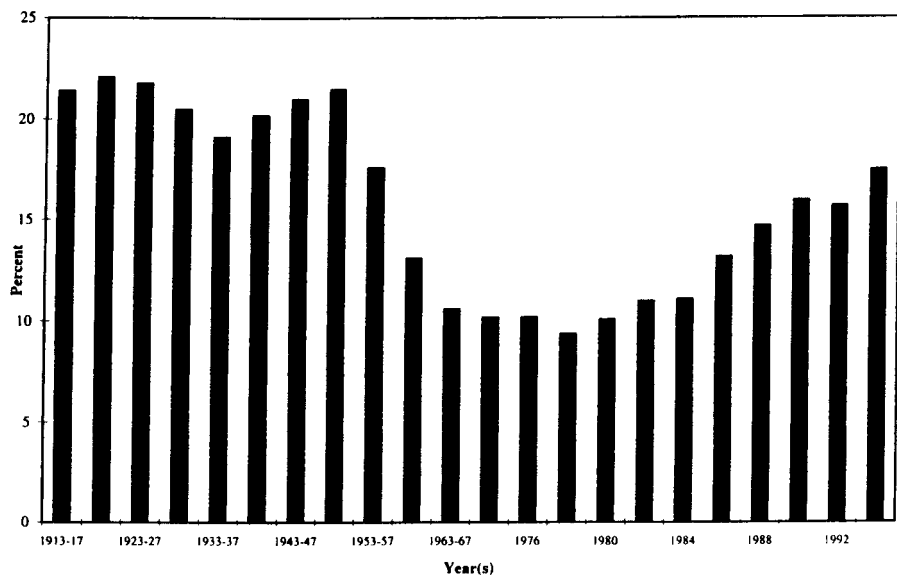


Fig. 2. Percent of women in US who are childless by age 40-44: 1913-1994. Source: NCHS, *Vital Statistics for the US*, selected years.

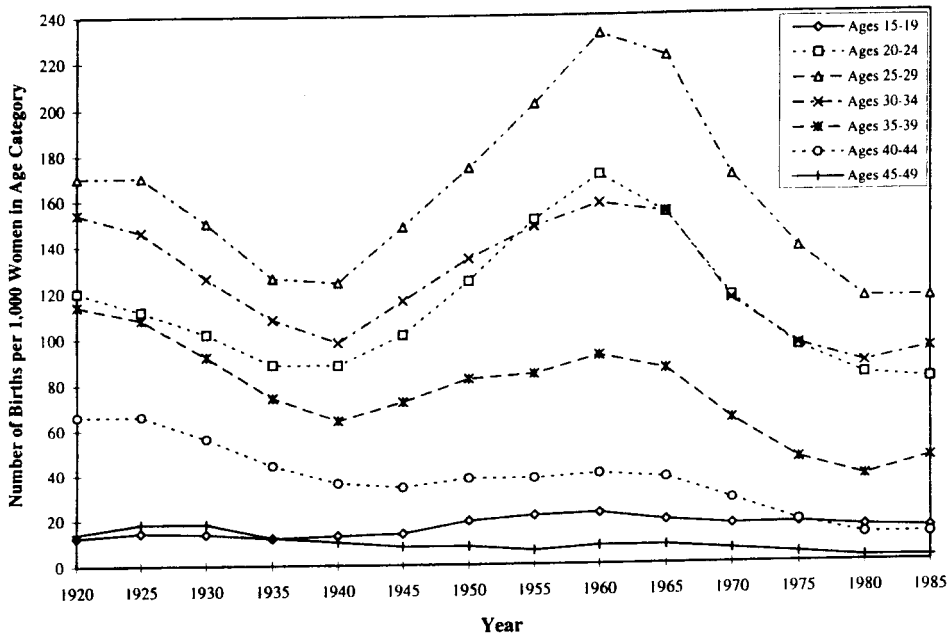


Fig. 3. Age-specific fertility rates for women in the US: 1920–1985. *Source:* NCHS, *Vital Statistics for the United States*, selected years.

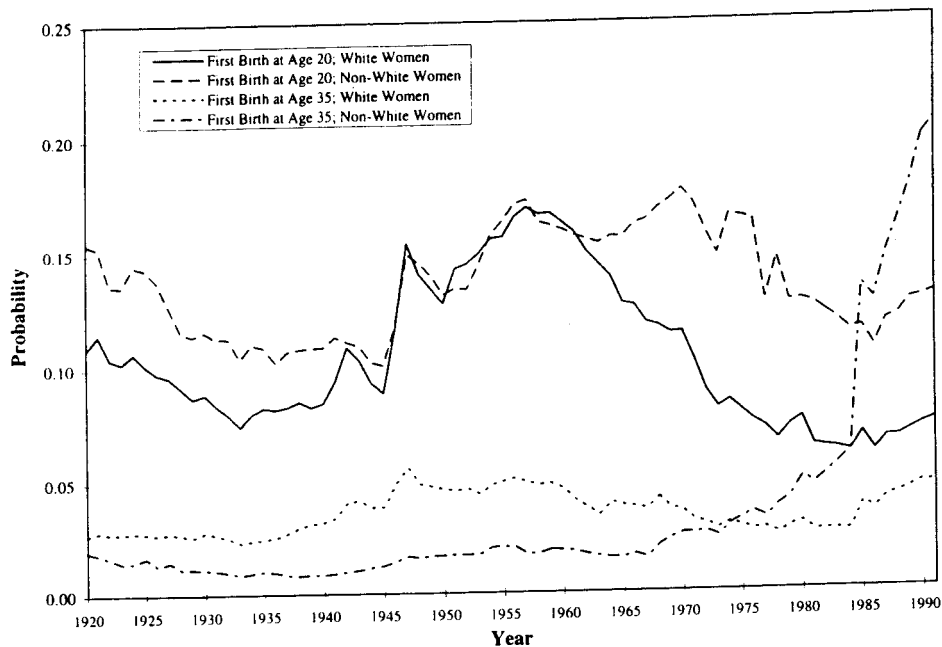


Fig. 4. First birth probabilities in US by race and for various ages: 1917–1991. Source: NCHS, *Vital Statistics for the United States*, selected years.

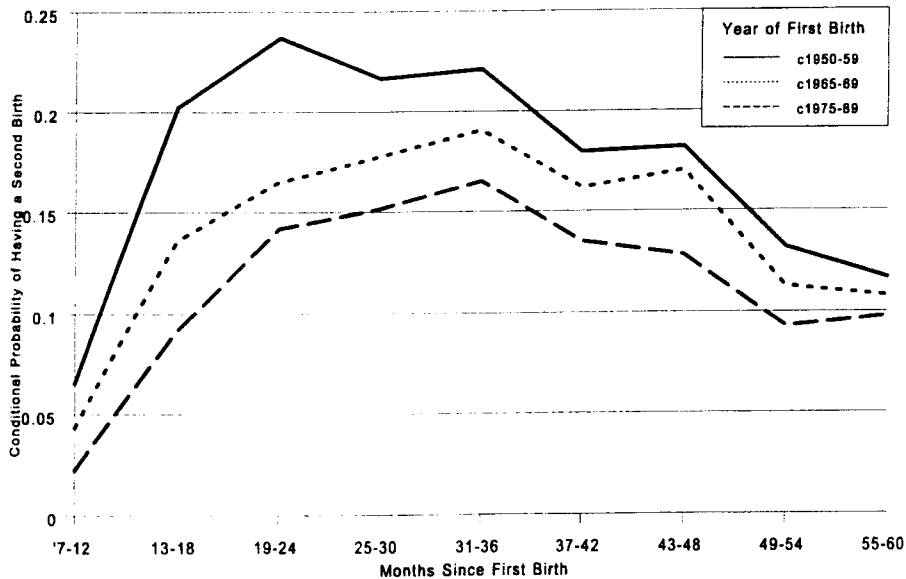


Fig. 5. Trends in the timing of second births in US; 1950–1989 (Morgan, 1995).

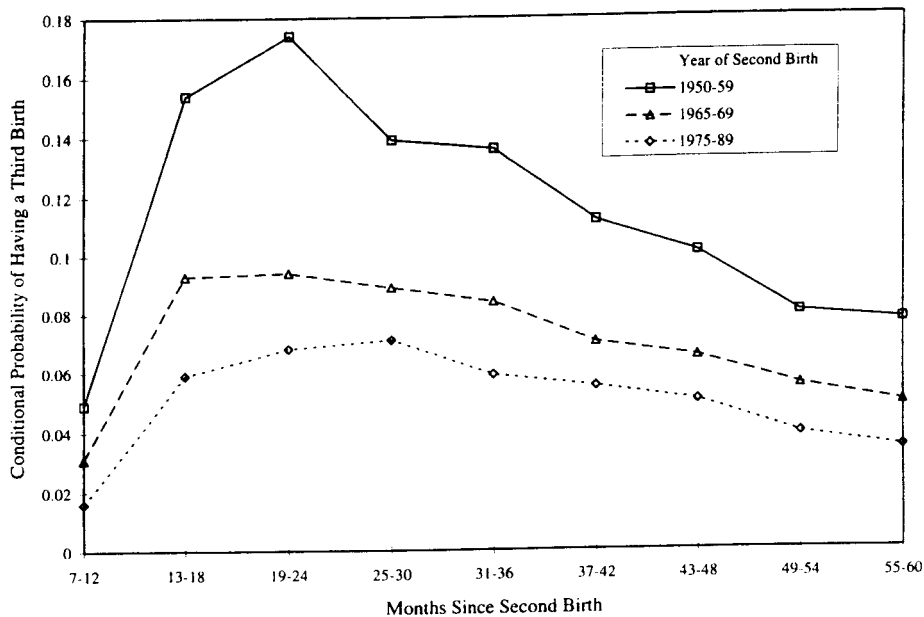


Fig. 6. Trends in the timing of third births in US; 1950–1989 (Morgan, 1995).

Table 1
US trends in nonmarital childbearing by race and age: 1963–1992

Ages	Ratio of births to unmarried women to all births							Births per 1000 unmarried women							Births per 1000 married women						
	1963	1968	1973	1978	1983	1988	1992	1963	1968	1973	1978	1983	1988	1992	1963	1968	1973	1978	1983	1988	1992
<i>All races:</i>																					
15–19	0.17	0.27	0.34	0.44	0.53	0.65	0.70	15	20	23	25	30	36	45	487	436	340	323	348	371	410
20–24	0.06	0.08	0.11	0.16	0.23	0.33	0.41	40	37	32	35	42	56	69	321	243	181	188	203	209	213
25–29	0.03	0.04	0.05	0.07	0.11	0.16	0.20	49	38	30	29	36	49	57	206	157	131	137	146	154	160
30–34	0.03	0.04	0.05	0.06	0.09	0.12	0.14	33	28	20	17	22	32	38	114	80	61	68	79	91	97
35–39	0.03	0.05	0.06	0.07	0.10	0.13	0.15	16	15	11	8	10	15	19	57	38	24	21	25	32	37
40–44	0.04	0.05	0.08	0.10	0.13	0.16	0.18	4	4	3	2	3	3	4	16	11	6	5	4	6	6
15–44	0.06	0.10	0.13	0.16	0.20	0.26	0.30	23	24	24	26	30	39	45	146	117	95	94	94	91	90
<i>Whites:</i>																					
15–19	0.09	0.16	0.19	0.29	0.39	0.54	0.60	7	10	11	14	19	25	33	473	422	328	318	339	356	393
20–24	0.03	0.05	0.05	0.08	0.14	0.23	0.32	21	23	16	18	27	39	53	319	240	179	184	199	206	207
25–29	0.01	0.02	0.02	0.03	0.07	0.10	0.14	23	22	16	15	24	36	45	204	158	132	137	146	154	159
30–34	0.01	0.02	0.02	0.03	0.05	0.08	0.10	15	15	11	9	16	24	32	113	79	61	67	79	91	96
35–39	0.02	0.02	0.03	0.04	0.07	0.09	0.11	5	5	6	5	8	12	16	35	23	23	20	24	31	36
40–44	0.02	0.03	0.04	0.06	0.07	0.13	0.15	5	5	2	1	2	3	4	35	23	6	4	4	5	6
15–44	0.03	0.05	0.06	0.09	0.13	0.18	0.23	11	13	12	14	20	27	35	143	115	94	93	93	90	90
<i>Blacks:</i>																					
15–19			0.71	0.83	0.89	0.91	0.93			95	88	86	96	106			454	353	476	561	595
20–24			0.39	0.53	0.61	0.69	0.75			116	111	107	134	144			192	212	227	227	248
25–29			0.26	0.32	0.41	0.49	0.55			85	80	80	97	98			113	124	127	132	144
30–34			0.23	0.26	0.33	0.41	0.47			58	44	44	57	58			58	66	70	74	83
35–39			0.23	0.26	0.31	0.38	0.45			28	19	19	24	26			30	28	27	29	34
40–44			0.23	0.28	0.32	0.37	0.42			8	6	5	5	5			10	7	6	6	7
15–44			0.45	0.53	0.58	0.63	0.68			89	81	77	87	87			98	94	88	83	86

Source: NCHS, Vital Statistics and Health Statistics, "Births to Unmarried Mothers: United States, 1980–92", Series 21, No. 53, June 1995 and NCHS, *Vital Statistics for the US*, Vol. 1 – Natality, 1995.

Table 2

Incidence and utilization patterns for various contraceptive methods for women, age 15–44, in US: 1982, 1988 and 1990

	% of women using any method			% of women using particular method, given using some method					
	1982	1988	1990	Female sterilization			Male sterilization		
				1982	1988	1990	1982	1988	1990
<i>Age</i>									
15–24	40.8	45.7	43.9	3.2	3.1	4.2	2.7	1.0	0.9
25–34	66.7	66.3	63.2	22.1	24.8	25.2	10.1	10.0	9.1
35–44	61.6	68.3	68.9	43.5	47.7	47.9	19.9	20.8	22.9
<i>Race</i>									
Hispanic		50.4	52.2		31.7	33.1		4.3	6.4
White, non-Hispanic	52.0	62.9	60.5	22.1	25.6	27.3	12.2	14.3	15.5
Black, non-Hispanic	56.7	56.8	58.7	30.0	37.8	41.0	1.4	0.9	1.3
<i>Marital status</i>									
Currently married	69.7	74.3	70.7	26.9	31.4	33.5	15.5	17.3	19.2
Divorced, separated, widowed	55.5	57.6	57.3	39.2	50.7	52.1	3.4	3.6	2.8
Never married	35.3	41.9	43.0	3.7	6.4	9.6	1.8	1.8	1.1
<i>Woman's educational attainment</i>									
0–11		60.2	60.6		51.9	58.0		6.9	6.8
12		67.5	66.3		34.3	38.4		15.0	15.7
13 and over		65.8	63.1		20.7	22.3		12.6	13.7
<i>Income (% of poverty level)</i>									
0–149		60.2	59.4		42.8	47.2		5.2	6.2
150–299		67.1	66.2		34.5	38.5		13.1	11.8
300 and over		67.0	64.0		23.5	25.1		15.1	16.5

Source: National Surveys of Family Growth, 1982, 1988, 1990.

Pill			IUD			Diaphragm			Condom			Other methods		
1982	1988	1990	1982	1988	1990	1982	1988	1990	1982	1988	1990	1982	1988	1990
57.6	63.6	53.8	3.4	0.2	0.4	9.0	2.4	0.3	13.5	23.5	34.3	10.6	6.3	6.1
24.7	32.9	35.4	9.7	2.1	0.7	10.3	7.2	3.5	11.4	13.8	17.4	10.7	9.1	8.8
3.7	4.3	6.7	6.9	3.2	2.6	4.0	6.0	3.5	11.3	11.2	9.8	10.8	6.9	6.7
	33.4	31.4		5.0	1.9		2.4	1.5		13.6	17.1		9.6	8.8
26.7	29.5	28.5	6.9	1.5	1.3	8.8	6.6	3.9	12.7	16.2	17.0	10.7	7.3	7.4
38.0	38.1	28.5	9.1	3.2	1.4	3.5	2.0	1.6	6.2	10.1	19.4	11.7	8.0	6.8
19.3	20.4	20.6	6.9	2.0	1.4	6.5	6.2	4.1	14.1	14.3	14.0	10.8	8.4	7.3
28.4	25.3	22.4	11.5	3.6	2.5	6.7	5.3	0.9	1.5	5.0	9.7	9.2	5.7	9.6
53.0	59.0	50.5	5.4	1.3	0.8	13.4	4.9	0.6	11.6	19.6	30.1	11.1	7.0	7.3
	22.6	18.4		3.8	1.7		1.3	0.2		6.4	11.7		7.2	3.3
	29.4	26.8		1.7	1.1		2.8	1.7		10.7	11.0		6.1	5.3
	28.7	28.0		2.2	1.7		10.0	4.6		16.4	19.3		9.5	10.4
	31.3	24.8		3.3	1.1		2.3	0.6		10.2	14.9		5.0	5.3
	26.6	26.6		2.4	2.5		5.0	1.9		11.4	12.9		7.0	5.8
	27.8	27.3		1.7	1.0		8.0	4.2		14.5	16.8		9.3	9.2

Table 3

Proportion of abortions to pregnancies ending in abortion or live birth; rate of abortions per 1000 women aged 15–44; and number of reported abortions (in thousands): United States, selected years 1973–1992 and other countries (year in parentheses).

Country, year	Proportion	Rate	Abortions
<i>United States</i>			
1973	0.193	16.3	744.6
1975	0.249	21.7	1034.2
1977	0.286	26.4	1316.7
1979	0.296	28.8	1497.7
1981	0.301	29.3	1577.3
1983	(0.304)	(28.5)	(1575.0)
1985	0.297	28.0	1588.6
1988	0.286	27.3	1590.8
1991	0.274	26.3	1556.5
1992	0.275	25.9	1528.9
<i>Eastern and Central Europe</i>			
Soviet Union (1987) ^a	0.549	111.9	6818000
Czechoslovakia (1987)	0.422	46.7	156600
Hungary (1987)	0.402	38.2	84500
German Dem. Rep. (1984)	0.297	26.6	96200
<i>Selected other countries</i>			
Australia (1988)	0.204	16.6	63200
Belgium (1985)	0.122	7.5	15900
Canada (1985)	0.166	12.1	74800
Denmark (1987)	0.270	18.3	20800
England and Wales (1987)	0.186	14.2	156200
France (1987) ^a	0.173	13.3	161000
German Fed. Rep. (1986) ^a	0.128	7.0	88500
Italy (1987) ^a	0.257	15.3	191500
Japan (1987) ^a	0.270	18.6	497800
Netherlands (1986)	0.090	5.3	18300
New Zealand (1987)	0.136	11.4	8800
Singapore (1987)	0.327	30.1	21200
Sweden (1987)	0.249	19.8	34700

^aBased on statistics that are incomplete.

Sources: US data: Henshaw and Van Vort (1994). US data in parentheses are estimated by interpolating the numbers of abortions. International data: Henshaw (1990: Table 3, p. 86).

Table 4

Labor force participation rates for wives, husband present, by age of own youngest child in US: 1975–1994

Presence and age of child	1975	1980	1985	1990	1994
All wives	44.4	50.2	54.2	58.2	60.6
No children under age 18	43.8	46.0	48.2	51.1	53.2
With children under age 18	44.9	54.3	60.8	66.3	69.0
Under 6, total	36.7	45.3	53.4	58.9	61.7
Under 3	32.7	41.5	50.5	55.5	59.7
1 year or under	30.8	39.0	49.4	53.9	58.8
2 years	37.1	48.1	54.0	60.9	64.5
3–5 years	42.2	51.7	58.4	64.1	64.6
3 years	41.2	51.5	55.1	63.1	62.9
4 years	41.2	51.4	59.7	65.1	63.9
5 years	44.4	52.4	62.1	64.5	67.1
6–13 years	51.8	62.6	68.2	73.0	75.5
14–17 years	53.5	60.5	67.0	75.1	77.2

Source: Current Population Surveys, 1975, 1980, 1985, 1990, 1994.