

This work is licensed under a [Creative Commons Attribution-NonCommercial-ShareAlike License](https://creativecommons.org/licenses/by-nc-sa/4.0/). Your use of this material constitutes acceptance of that license and the conditions of use of materials on this site.



Copyright 2008, The Johns Hopkins University and Nan Astone. All rights reserved. Use of these materials permitted only in accordance with license rights granted. Materials provided "AS IS"; no representations or warranties provided. User assumes all responsibility for use, and all liability related thereto, and must independently review all materials for accuracy and efficacy. May contain materials owned by others. User is responsible for obtaining permissions for use from third parties as needed.

Session I

Measurement

Social and Economic Aspects of Fertility Decline

Population, Family and Reproductive Health

380.655

AY 2008-2009

Objectives of the Lecture

- At the end of this lecture and the accompanying readings, students will be able to:
 - identify and distinguish among the major measures of fertility

Brief Discussion of Measurement of Fertility

- Crude Birth Rate
 - Number of births during t/mid-year population in t
- General Fertility Rate
 - Number of births during t/mid-year population of women aged 15-49
- Age Specific Fertility Rate
 - Number of births to women aged x during t/mid-year population of women aged x

Crude Birth Rate

(Number of Births in the U.S. in
1988/Number of People in the
U.S. in 1988) * 1000

$(3,046,162/298,444,215) * 1000$

10.2

General Fertility Rate

(Number of Births in the U.S. in
1988/Number of Women aged
15-49 in the U.S. in 1988) *
1000

$(3,046,162/54,022,000) * 1000$

56.4

Age Specific Fertility Rates (U.S. 1988)

Age	Number of Births (A)	Number of Women (B)	ASFR (A/B) × 1,000
15-19	319,544	7,213,000	44.30
20-24	804,622	7,852,000	102.47
25-29	1,010,748	9,057,000	111.60
30-34	661,414	9,069,000	72.93
35-39	217,754	8,110,000	26.85
40-44	31,068	7,024,000	4.42
45-49	1,012	5,697,000	0.18

Total Fertility Rate

- The number of children a woman would have if she experienced a specific set of age specific fertility rates for her whole lifetime
- Remember, there is no woman who experiences the age specific rates of the U.S. in 1988
 - That is, a woman 20-24 in 1988 will experience the 1988 20-24 rates, but will experience the 25-29 rates from 1993

Total Fertility Rate U.S. 1988

1	2
ASFR	Cumulative ASFR
44.30	221.51
102.47	733.87
111.60	1291.87
72.93	1656.52
26.85	1790.77
4.42	1812.89
0.18	1813.78
	1.80

Gross Reproduction Rate

- Special Case of the TFR
- Counts only daughters
- Indicator of how women are reproducing themselves, assuming no mortality
- Can multiply the TFR by the proportion of births that are female
 - Imprecise because in some populations the sex ratio at birth varies by age at mother, so the GRR will depend on how births are distributed by age of mother

Net Reproduction Rate

- Same as the GRR (i.e. counts only daughters), but
- Includes mortality of women

Some data from Taiwan

- 1970

- CBR = 27.2/1000
- GFR = 120/1000
- TFR = 4.0
- GRR = 1.94
- NRR = 1.84

- 1980

- CBR = 23.3/1000
- GFR = 91/1000
- TFR = 2.5
- GRR = 1.22
- NRR = 1.17

Objectives of the Lecture

- At the end of this lecture and the accompanying readings, students will be able to:
 - identify and distinguish among the major measures of fertility