

# Calculating and interpreting key indicators on births

**Workshop on Vital Statistics for North and Central Asian Countries**

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## Key indicators on live births

- Crude Birth Rate (CBR)
- General Fertility Rate
- Sex ratio at birth
- Age-specific fertility rates (ASFR)
- Total Fertility Rate (TFR)
- Childlessness
- Parity Progression Ratios

Crude Birth Rate:

$$\text{CBR} = \frac{\text{Total resident live births} \times 1,000}{\text{Total Population}}$$

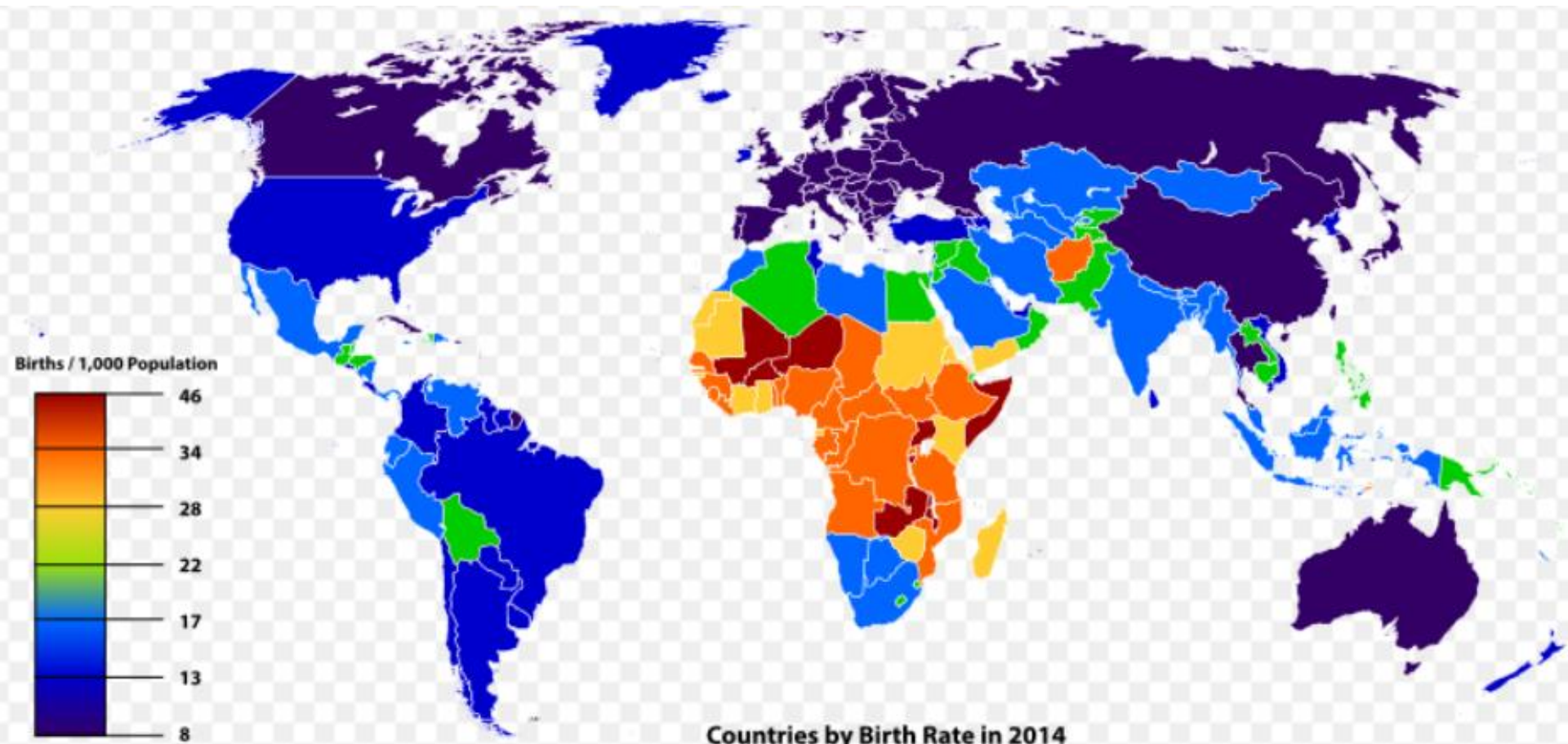
Sex Ratio at Birth:

$$\frac{\text{Number of male live births} \times 100}{\text{Number of female live births}}$$

Crude Birth Rate:

$$\text{CBR} = \frac{\text{Total resident live births} \times 1,000}{\text{Total Population}}$$

Countries by crude birth rate (CBR) in 2014

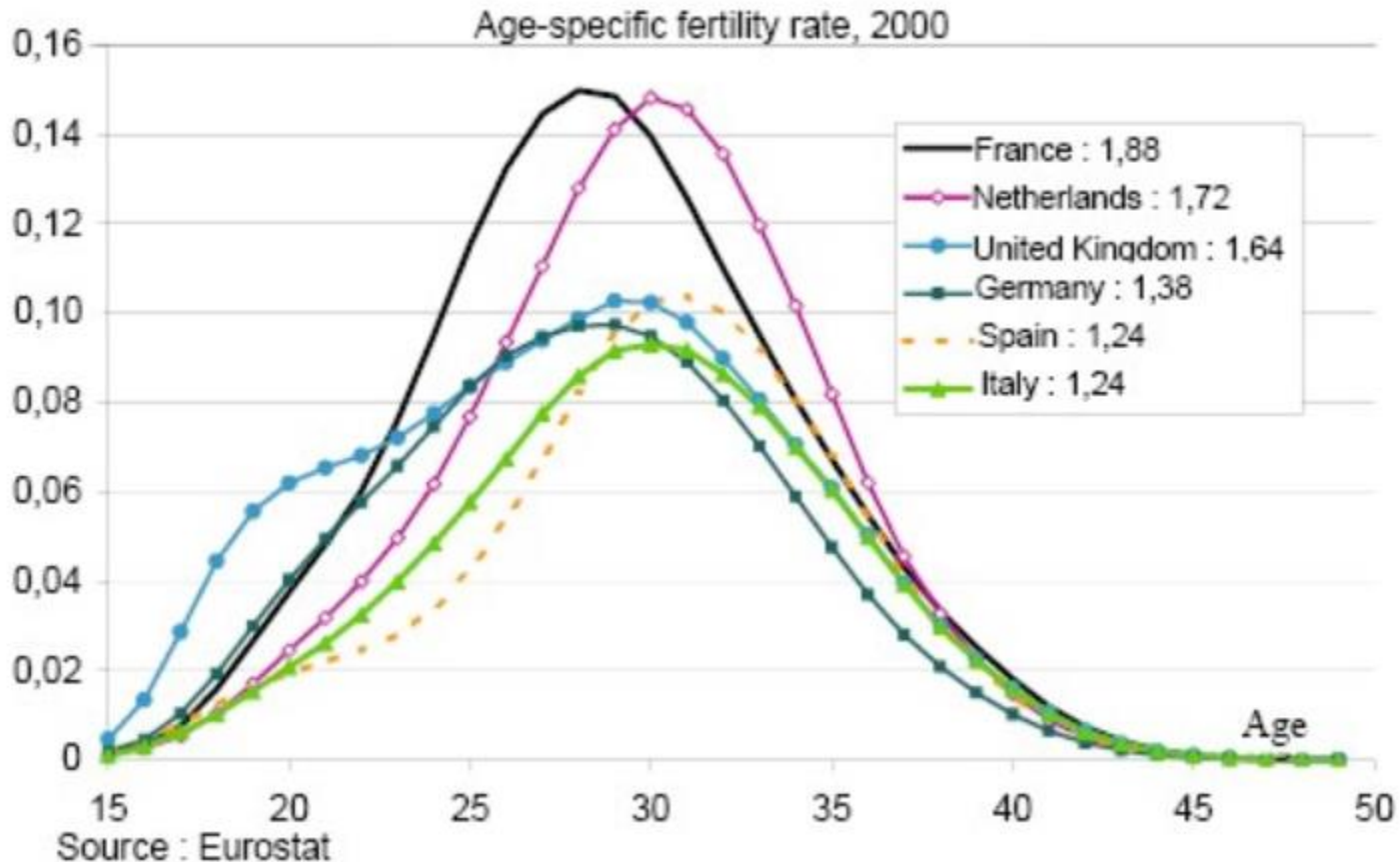


# Age-Specific Birth Rate

Age-specific birth rate is the number of live births to women in a specific age group for a specific area during a specified period divided by the total population of women in the same age group for that area and period multiplied by 1,000 to obtain a rate:

# live births to women in a specific age group X 1,000

# of women in the same age group



# Total Fertility Rate

TFT is the sum of the age-specific birth rates (ASBR) (5-year age groups between 10 and 49) of female residents of a specific area during a specified period multiplied by 5:

$(\sum ASBR) \times 5$ , where ASBR is each 5-year age-specific birth rate:

$B_x$  (the number of live births to mothers age  $x$ )  $\times$  1,000

$P_x$  (the number of women of age  $x$ )

## Adjusting for completeness less than 100 %

- TFR is 4.0 based on CR data
- Completeness rate is 70%
- What is the adjusted TFR?
- $TFR^* = 4.0/0.7 = 5.7$

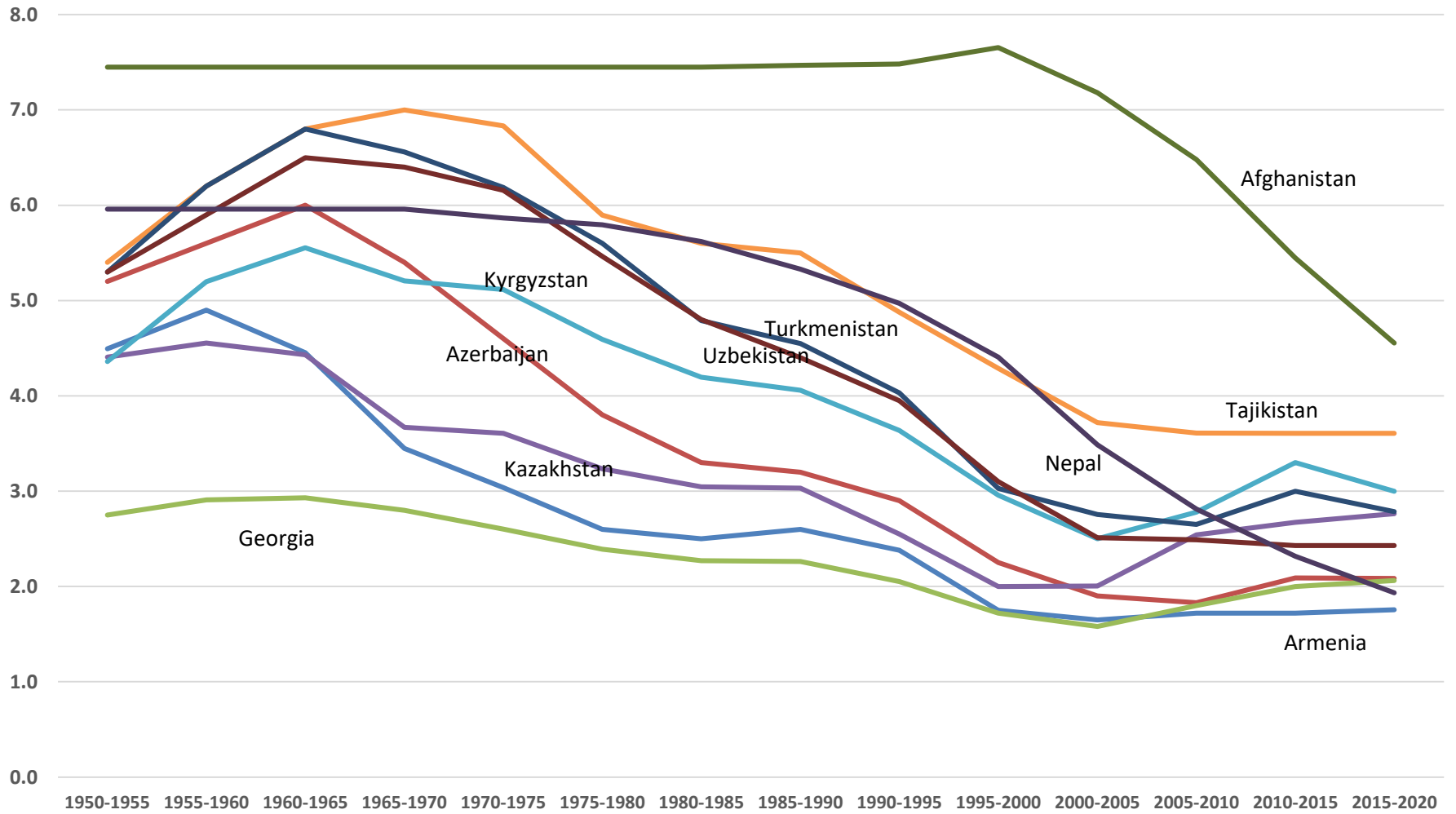
# Total Fertility Rate in Workshop countries in 5-year periods, 1950-2020

	1950-1955	1955-1960	1960-1965	1965-1970	1970-1975	1975-1980	1980-1985	1985-1990	1990-1995	1995-2000	2000-2005	2005-2010	2010-2015	2015-2020
Armenia	4,49	4,90	4,45	3,45	3,04	2,60	2,50	2,60	2,38	1,75	1,65	1,72	1,72	1,76
Azerbaijan	5,20	5,60	6,00	5,40	4,60	3,80	3,30	3,20	2,90	2,25	1,90	1,83	2,09	2,08
Georgia	2,75	2,91	2,93	2,80	2,60	2,39	2,27	2,26	2,05	1,72	1,58	1,80	2,00	2,06
Kazakhstan	4,41	4,56	4,43	3,67	3,61	3,23	3,04	3,03	2,55	2,00	2,01	2,54	2,67	2,76
Kyrgyzstan	4,36	5,20	5,55	5,21	5,12	4,59	4,20	4,06	3,64	2,96	2,50	2,78	3,30	3,00
Tajikistan	5,40	6,20	6,80	7,00	6,83	5,90	5,60	5,50	4,88	4,29	3,72	3,61	3,61	3,61
Turkmenistan	5,30	6,20	6,80	6,56	6,19	5,60	4,79	4,55	4,03	3,03	2,76	2,65	3,00	2,79
Uzbekistan	5,30	5,90	6,50	6,40	6,16	5,46	4,80	4,40	3,95	3,10	2,51	2,49	2,43	2,43
Afghanistan	7,45	7,45	7,45	7,45	7,45	7,45	7,45	7,47	7,48	7,65	7,18	6,48	5,45	4,56
Nepal	5,96	5,96	5,96	5,96	5,87	5,80	5,62	5,33	4,97	4,41	3,49	2,81	2,32	1,93

Source: UN Population Division,  
<https://esa.un.org/unpd/wpp/Download/Standard/Fertility/>



# Total Fertility Rate



# Exercises

1. Calculate the CBR for a population with 180,000 live births in the 12,300,000 estimated population in 2005
2. *What is the sex ratio at birth for the area in 2008?*  
58,000 = male live births in 2008 to area residents  
55,000 = female live births in 2008 to area residents
3. *What is the 2008 birth rate for women 20-24 years?*  
36,000 = live births in 2008 among resident women 20-24 years old  
310,000 = area resident women who are 20-24 years old in 2008

4. Calculate the TFR for an area for 2015 from these numbers:

<b>Mother's Age Group</b>	<b>2000 Live Births (Bx)</b>	<b>2000 Mid-year Female Population (Px)</b>	<b>ASBR</b>
<b>10-14</b>	<b>300*</b>	<b>165,000</b>	
<b>15-19</b>	<b>11,000</b>	<b>179,000</b>	
<b>20-24</b>	<b>20,000</b>	<b>192,000</b>	
<b>25-29</b>	<b>22,000</b>	<b>222,000</b>	
<b>30-34</b>	<b>20,000</b>	<b>213,000</b>	
<b>35-39</b>	<b>10,000</b>	<b>212,000</b>	
<b>40-44</b>	<b>2,000</b>	<b>210,000</b>	
<b>45-49</b>	<b>500*</b>	<b>200,000</b>	

\* \*For groups 10-14 & 45-49, births to ages < 15 and 45+ are used