Total Fertility Rates

Data analysis and Report writing workshop for Civil registration and vital statistics data.

Adapted from Pacific Community’s Data analysis and report writing Workshop for the North Pacific
Question:

Which country has higher fertility?

<table>
<thead>
<tr>
<th></th>
<th>TFR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country A</td>
<td>3.9</td>
</tr>
<tr>
<td>Country B</td>
<td>2.7</td>
</tr>
</tbody>
</table>
Question:

TFR is calculated from ASFRs, which are not affected by population structure. Higher TFR = higher fertility
Total fertility rate

- Although ASFRs accurately measure the fertility of women in each age group, it is difficult to use them to make comparisons among populations or within a certain population over time.
- ASFRs do not easily portray the overall level of fertility.
- Therefore, a summary index was developed, known as the total fertility rate.
- The total fertility rate is useful when comparing two different populations or when examining a given population over time.
- Readily understood by decision makers
- An indicator of how fast the population may grow and subsequently how the age structure may change (although obviously this is only one part of the equation – the others being mortality rates and migration)
The **total fertility rate (TFR)** is the average number of children a woman would give birth to during her lifetime if she were to pass through her childbearing years (15-49 years) experiencing the present day age-specific fertility rates.

The TFR is usually simply described as the average number of children per woman which makes it an intuitive measure of fertility.

The TFR is calculated by adding up all the age-specific fertility rates, multiplying this sum by five (the width of the age-group interval), and then dividing by 1,000.

\[
TFR = \frac{(\text{Sum of ASFR x 5})}{1,000}
\]
Calculating ASFRs

Table IV-1. Age-Specific Fertility Rates and Total Fertility Rate for Chile: 1983

<table>
<thead>
<tr>
<th>Age of women</th>
<th>Female population</th>
<th>Number of births</th>
<th>Fertility rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-19</td>
<td>593,262</td>
<td>36,784</td>
<td>62.0</td>
</tr>
<tr>
<td>20-24</td>
<td>587,076</td>
<td>81,213</td>
<td>138.3</td>
</tr>
<tr>
<td>25-29</td>
<td>505,362</td>
<td>65,236</td>
<td>129.1</td>
</tr>
<tr>
<td>30-34</td>
<td>424,186</td>
<td>37,506</td>
<td>88.4</td>
</tr>
<tr>
<td>35-39</td>
<td>385,749</td>
<td>17,532</td>
<td>45.4</td>
</tr>
<tr>
<td>40-44</td>
<td>325,105</td>
<td>4,929</td>
<td>15.2</td>
</tr>
<tr>
<td>45-49</td>
<td>266,575</td>
<td>512</td>
<td>1.9</td>
</tr>
</tbody>
</table>

Sum = 480.4

Sum x 5 / 1,000 = 2.4

The total fertility rate in Chile in 1983 was 2.4 births per woman.

Source: U.S. Census Bureau’s Population Analysis with Microcomputers Volume I Presentation of Techniques
Calculating Total Fertility

<table>
<thead>
<tr>
<th>Start with:</th>
<th>Age specific fertility rate</th>
<th>=</th>
<th>Births per 1,000 women per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>But:</td>
<td>Our age group is 5 years of age wide</td>
<td></td>
<td></td>
</tr>
<tr>
<td>So:</td>
<td>(Theoretically) Every women is exposed to that rate for 5 years</td>
<td>multiply by 5</td>
<td>Births per 1,000 women over 5 years of exposure to this rate</td>
</tr>
<tr>
<td>Now:</td>
<td>We want the number of births per woman while she is in that age group</td>
<td>divide by 1000</td>
<td>Births per woman over that 5 year age group</td>
</tr>
<tr>
<td>Finally:</td>
<td>There are 7 age groups that a women will go through in her childbearing years (15-19, 20-24, etc)</td>
<td>ADD births per woman over each age group</td>
<td>Births per woman over her childbearing years (from ages 15-49)</td>
</tr>
</tbody>
</table>
Exercise

- Calculate the TFR for the test data set
  - How does this compare to the rest of the world?
  - Bonus question: Is this at, above, or below replacement level?

- Repeat this exercise with data from your country and if possible look at trends over time.

- How is fertility changing over time in your country?
  - Is this what you would expect?
  - What factors do you think are influencing fertility?