A comparison of fertility measures from censuses and a civil registration and vital statistics system: The case of Republic of Korea

Action Area C. Integrated statistics for integrated analysis (SC3)

Which way now on the journey towards integrated statistics (2)?

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SDG 3.7: Ensuring access to sexual and reproductive health care services
Total Fertility Rate

- TFR is a basic fertility measure used to monitor the progress in women’s reproductive health

\[
Total \ fertility \ rate = \sum_{x=15}^{49} ASFR_x \times 5
\]
Total Fertility Rate (Republic of Korea, 1993-2018)

Source: Statistics Korea, 2020
Data sources for calculating TFR

• Civil registration (if reliable) is the preferred data source
• Census and household survey as alternate sources
Two issues with period TFR

• Period TFR is underestimated when there’s a delay in childbearing (tempo distortions)

• Includes all women aged 15-49 regardless of their birth history (incidence rates, rates of the second kind)
Tempo distortions in period TFR

![Diagram showing tempo distortions in period TFR](image-url)
Is there a delay in childbearing in ROK?

Mean age at childbearing, Republic of Korea (1993-2018)
Bongaarts and Feeney tempo adjusted TFR

\[ BF\ tempo\ adjTFR = \sum_{i} \frac{TFR_i}{1-m_i};\ i=\text{birth order } i\to n;\ m=\text{mean age at childbearing} \]
Parity progression ratios (PPRs)

• Insensitive to tempo distortions (based on birth order, no time dimension)
• Only includes those who have given births (occurrence-exposure rates, rates of the first kind)
Parity progression ratios (PPRs)

\[ \text{TFR}_{\text{pppr}} = p_0 + p_0 p_1 + p_0 p_1 p_2 + \cdots; \]
\[ p_i = \text{proportion of women progressing from } i\text{th to } (i+1)\text{th birth} \]
Fertility measures from Two different types of data sources and three different methods

• TFR from CRVS
• BF tempo adjTFR from CRVS
• TFR (2000, 2005, 2010 censuses, own children method)
• TFR (2010 census, parity progression ratios)
• TFR (2015 census, parity progression ratios)
Own-children Method

ASFR for age 24 in 1967 = $\frac{B_{24}}{W_{24}}$
Result (1)
2020 Asia-Pacific Statistics Week

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Leaving no one and nowhere behind

Result (2)
Summary : User needs

• Understanding rapid fertility decline in the Republic of Korea is a high policy priority

• Need to have accurate TFR estimate for family planning and integrating reproductive health into national strategies and health programmes
Summary : Data integration

• Administrative data (CRVS) and censuses are used to calculate the TFR
• Direct and indirect demographic methods (own children methods, PPRs) are used to estimate the TFR from censuses
Summary: Any lessons that may be relevant for other countries

- For countries without reliable CRVS, demographic methods can be used to estimate the TFR
- For countries with reliable CRVS, they can validate the quality of the CRVS and censuses
Summary : Dimensions of quality

• Single source of data can be biased, a mix of multiple data sources and methods are useful in validating the accuracy of TFR

• Methods presented here provide insights on current TFR of the Republic of Korea taking into account of “tempo effects” and “rates of first kind”
Further extension

• Using the same demographic methods presented here, TFR can be further disaggregated by education, occupation and other socioeconomic variables collected in the census.