Virtual Event 15-18 June 2020
2020 Asia-Pacific Statistics Week
Leaving no one and nowhere behind

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

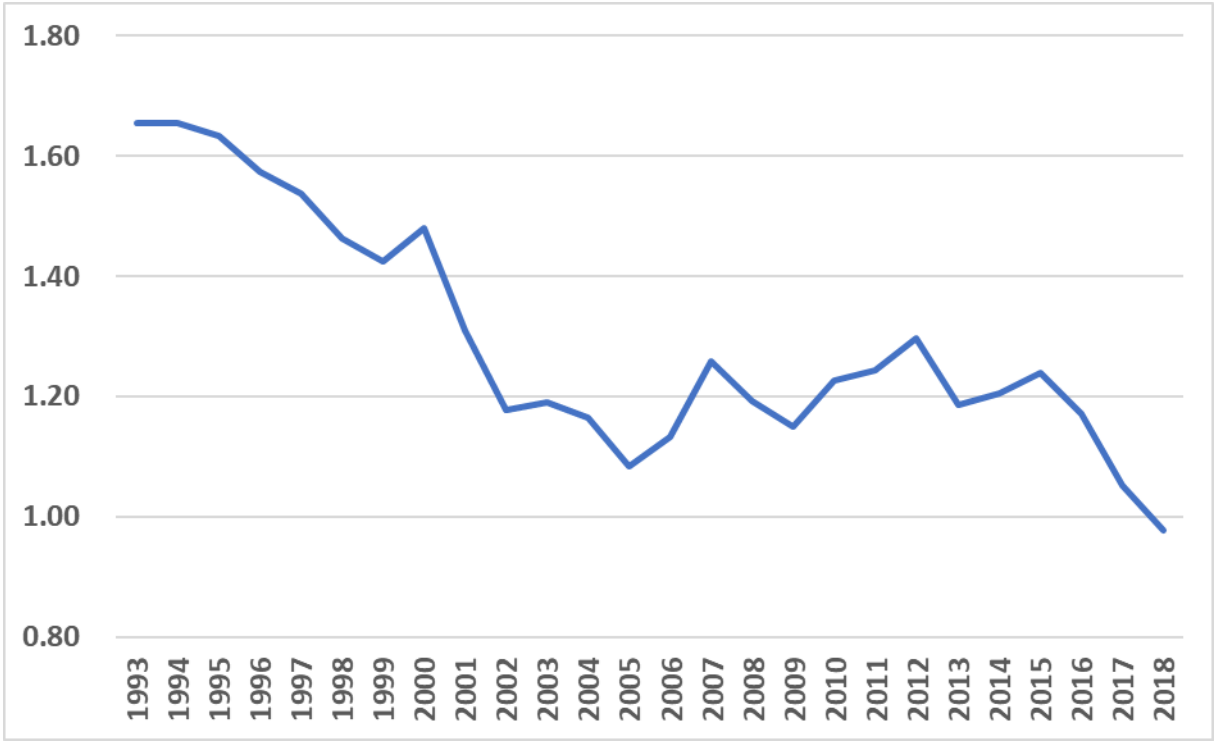
Total Fertility Rate

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

$$\textbf{Total fertility rate} = \sum_{x=15}^{49} ASFR_x \times 5$$

x = age

Total Fertility Rate (Republic of Korea, 1993-2018)



Source: Statistics Korea, 2020

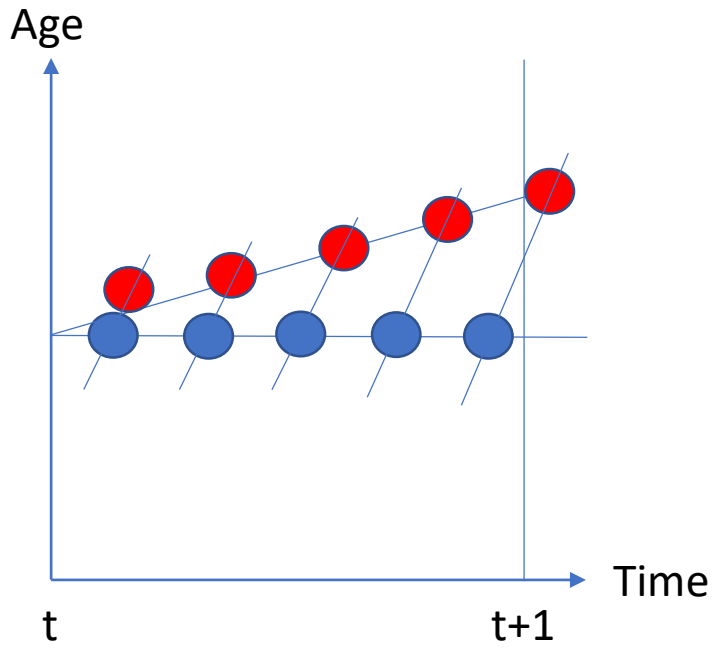
Data sources for calculating TFR

- Civil registration (if reliable) is the preferred data source
- Census and household survey as alternate sources

Two issues with period TFR

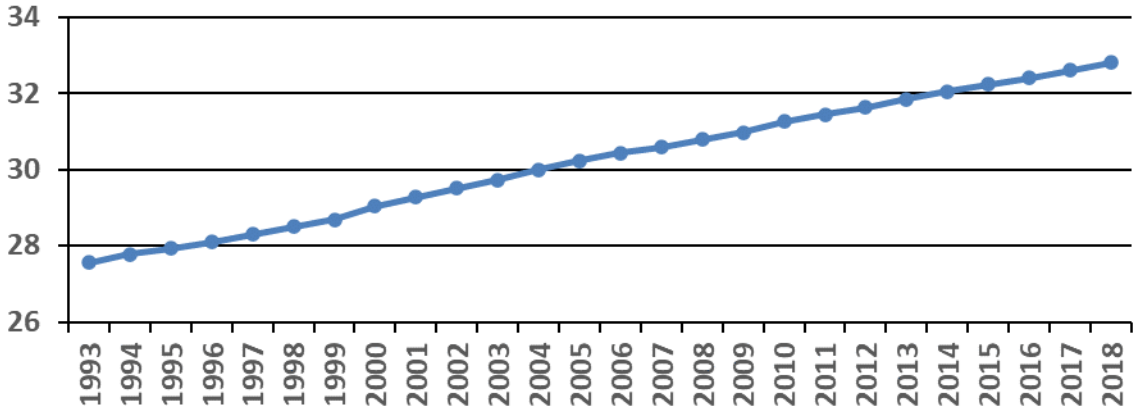
- Period TFR is underestimated when there's a delay in childbearing (tempo distortions)
- Includes all women aged 15-49 regardless of their birth history (incidence rates, rates of the second kind)

Tempo distortions in period TFR



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=birth order i to n; m=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)

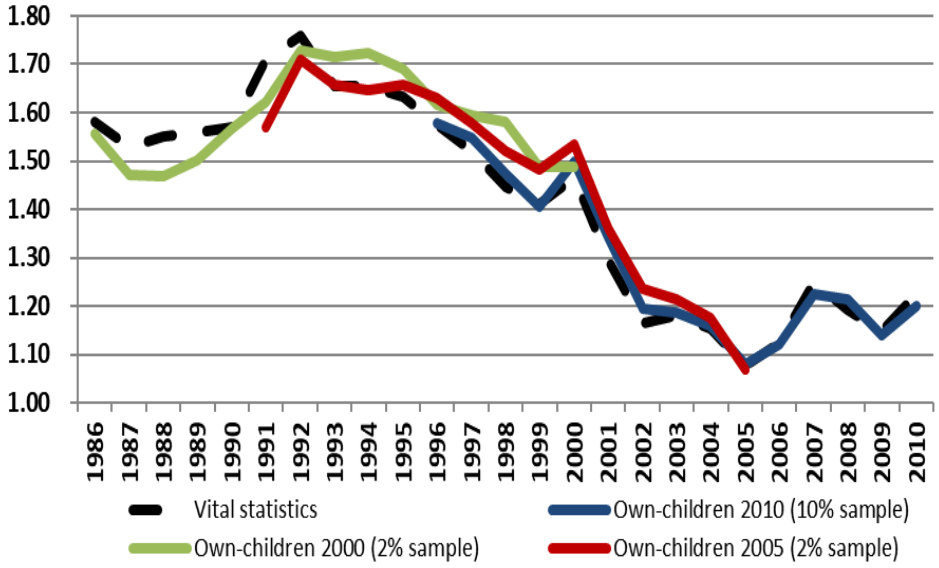
$$\text{TFRpppr} = p_0 + p_0p_1 + p_0p_1p_2 + \cdots;$$

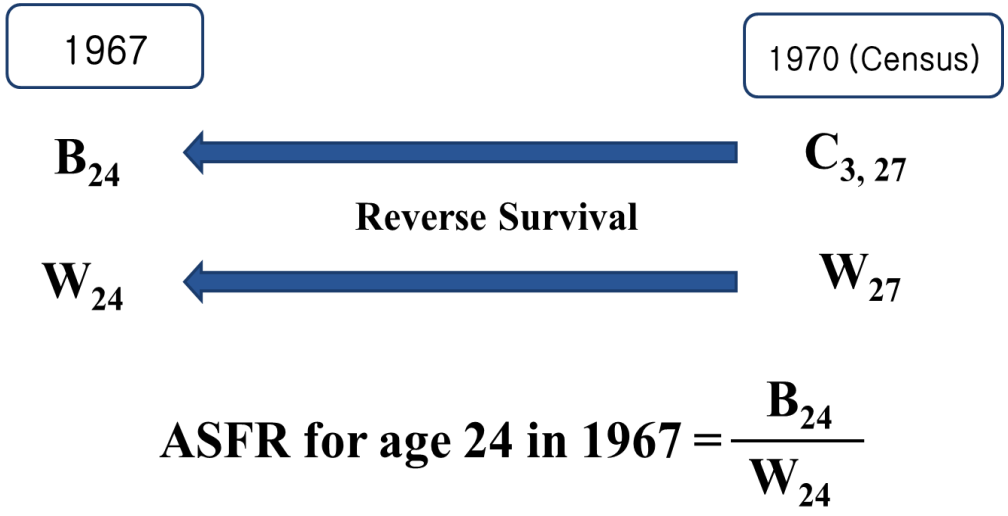
p_i=proportion of women progressing from ith to (i+1)th birth

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)

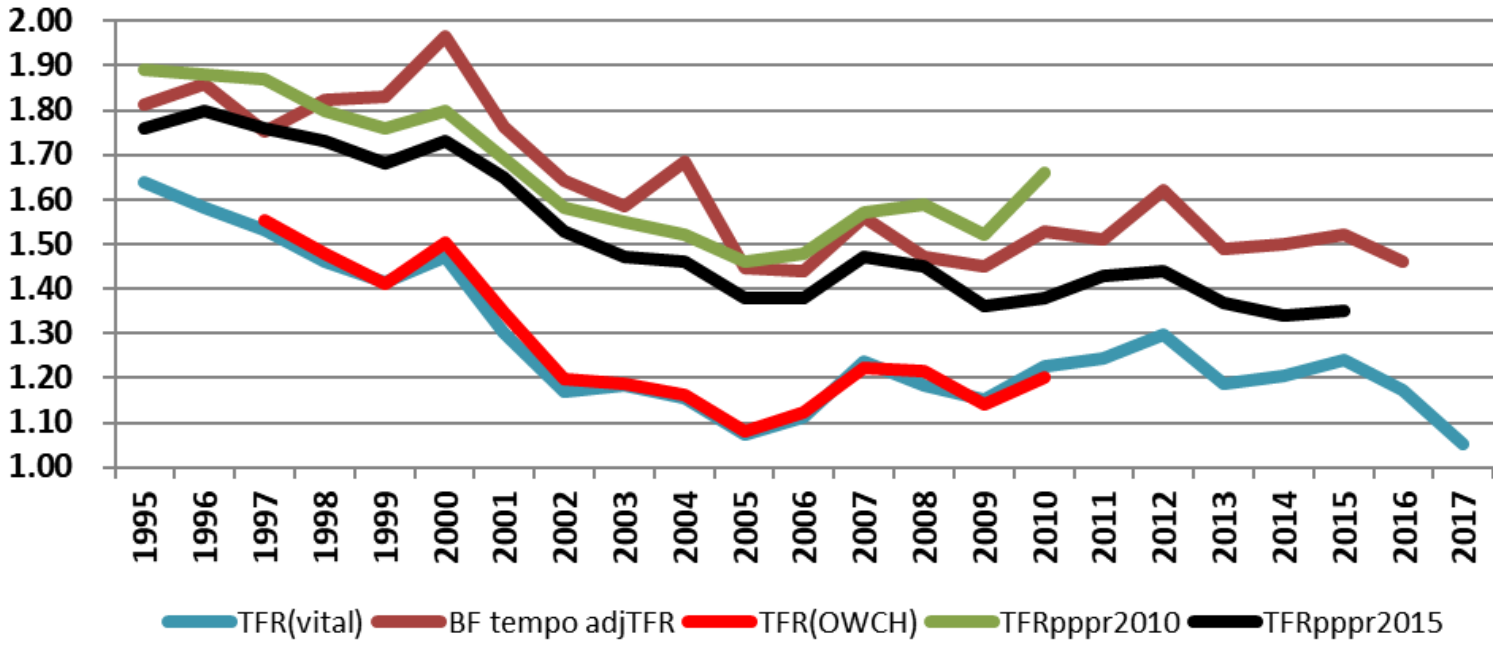
Own-children Method



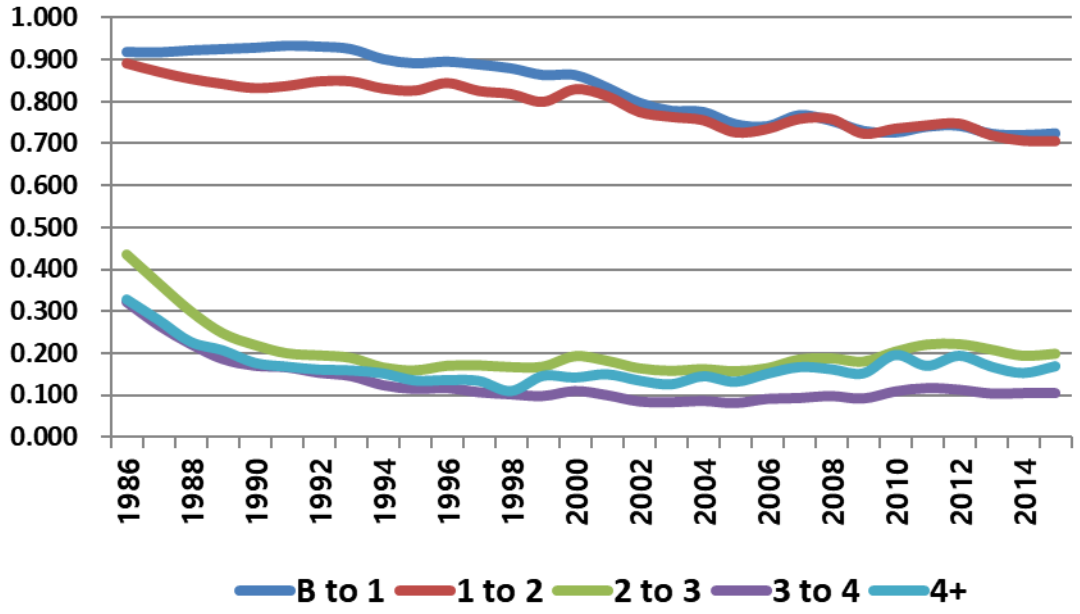


$$\text{ASFR for age 24 in 1967} = \frac{B_{24}}{W_{24}}$$

Result (1)


2.00
1.90
1.80
1.70
1.60
1.50
1.40
1.30
1.20
1.10
1.00
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
TFR(vital)
BF tempo adjTFR
TFR(OWCH)
TFRpppr2010
TFRpppr2015

Result (2)


1.000
0.900
0.800
0.700
0.600
0.500
0.400
0.300
0.200
0.100
0.000
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
B to 1
1 to 2
2 to 3
3 to 4
4+

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