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Fertility transition in subnational areas of sub-Saharan Africa: Where do they stand and what has contributed most to the transition?

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Outline

1. Introduction
2. Data and methods
3. Results
4. Conclusions

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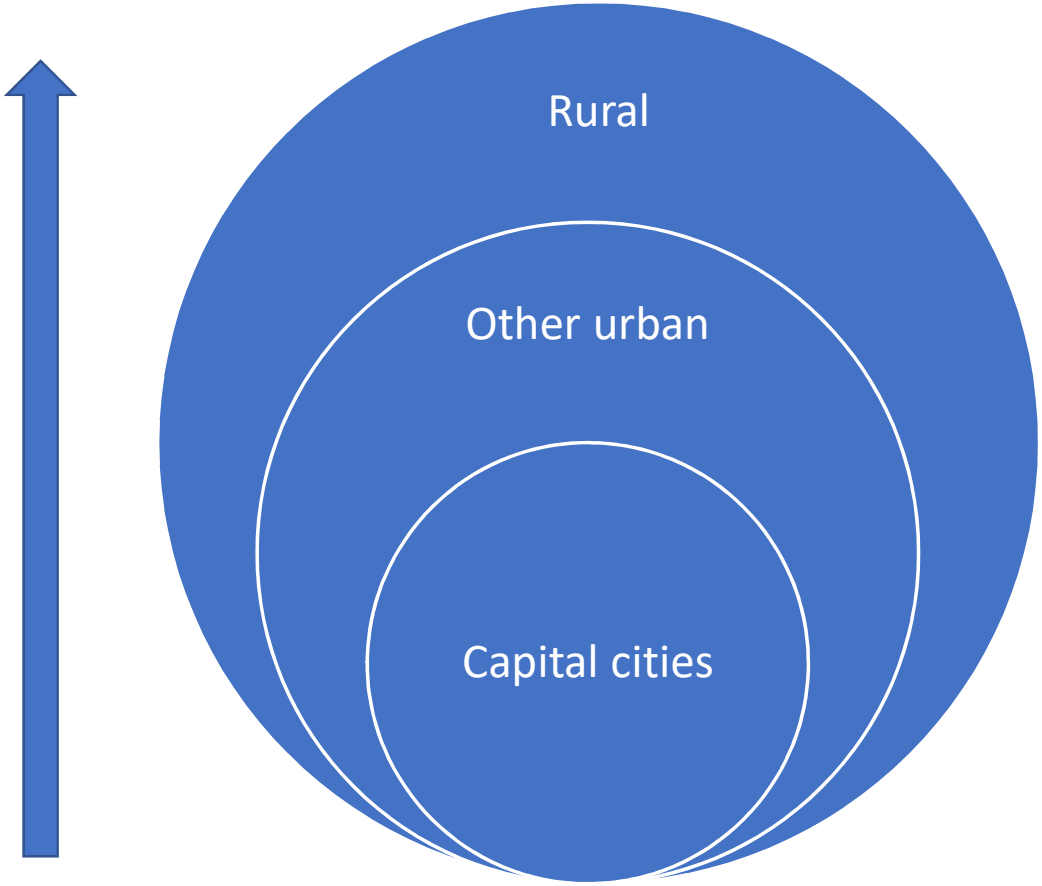
- **Fertility transition** consists in the **decline** in the total fertility rate (**TFR**) from high rates **to replacement level**.

- Stylized models of fertility transition:

  (Corker 2017; Dyson 2011; Rodrigo-Comino et al. 2021 Shapiro and Tambashe 2002)



- **Low levels of urbanization** in SSA (UNDESA 2018):
  - Fertility patterns of the largest population subgroup, i.e., rural population, greatly affects the total population.

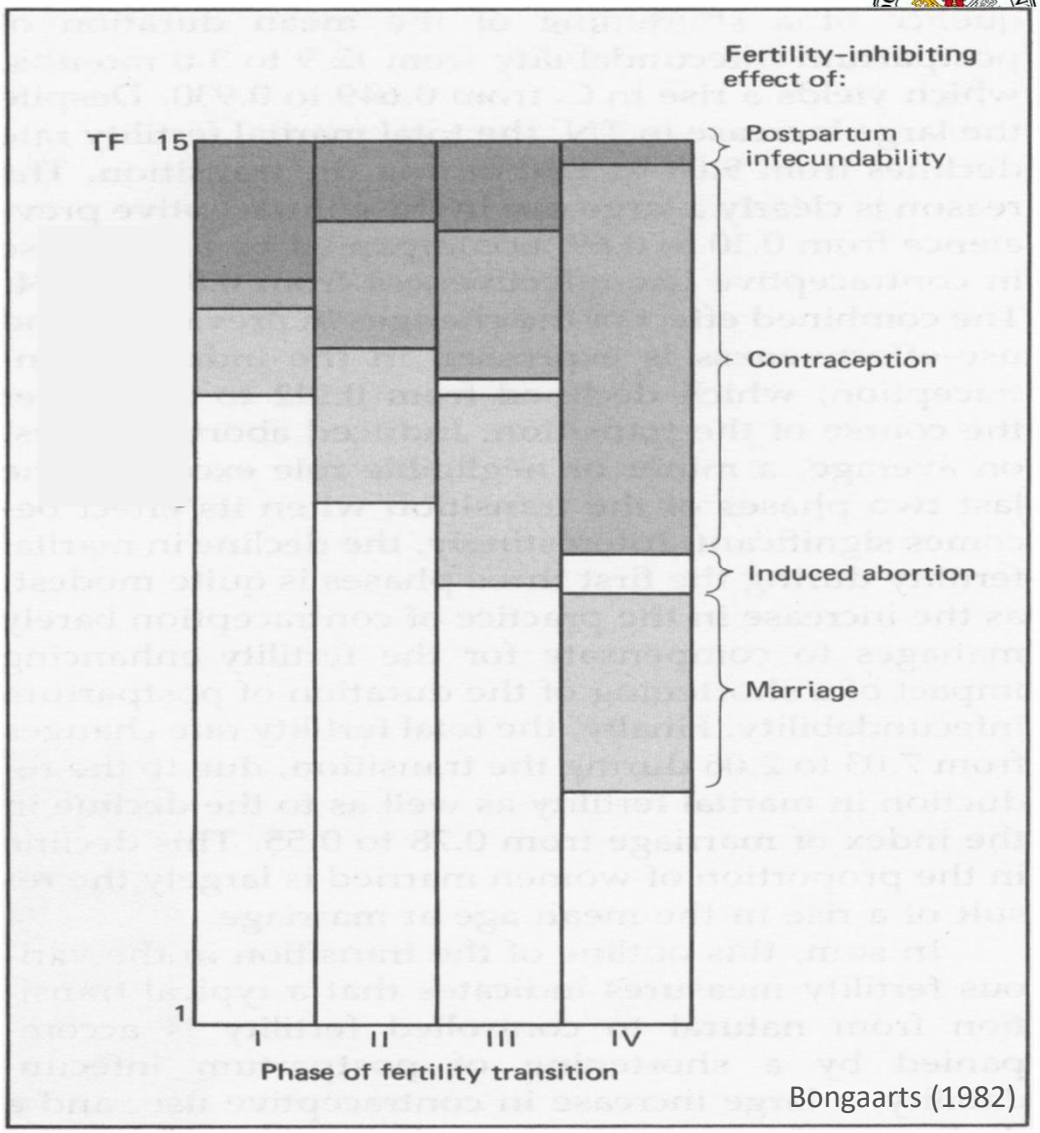
- The rapid **increase in urbanization** is due to **natural growth** (Collier 2017; Menashe-Oren and Bocquier 2021):
  - It suggests persistent high fertility rates among urban dwellers.

- **Population in SSA** is projected to **keep growing** (UNDESA 2024).

- "**Different**" fertility transition: slow decline and fertility **stalls** (Sánchez-Páez and Schoumaker 2022; Schoumaker 2019; Bongaarts 2006, 2008; Shapiro and Gebreselassie 2008).

Phases of fertility transition

Four phases of fertility transition:

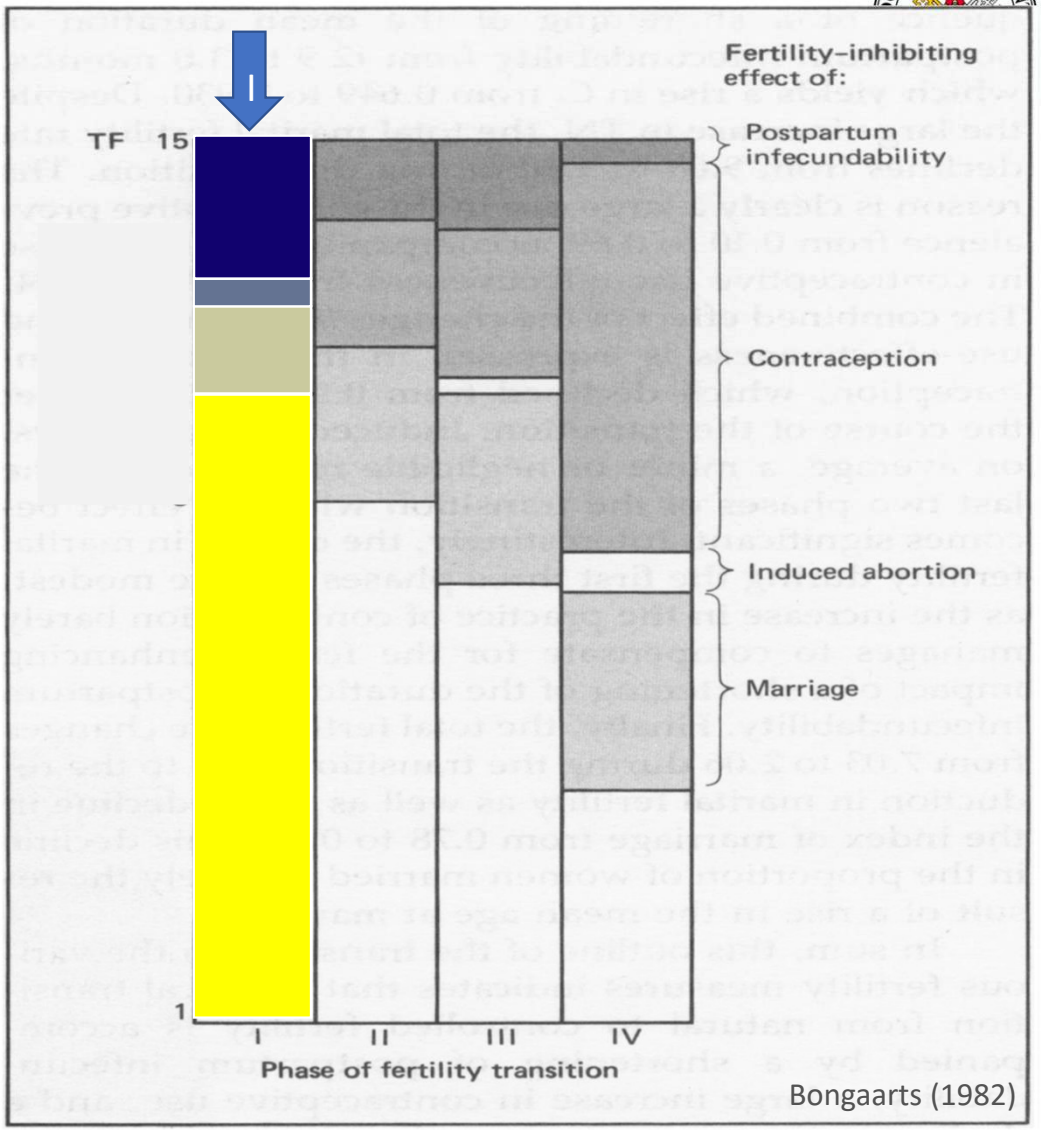


Bongaarts (1982)

Phases of fertility transition

Four phases of fertility transition:

I. **TFR over 6.0**: Effect of postpartum infecundability is the largest.



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Four phases of fertility transition:

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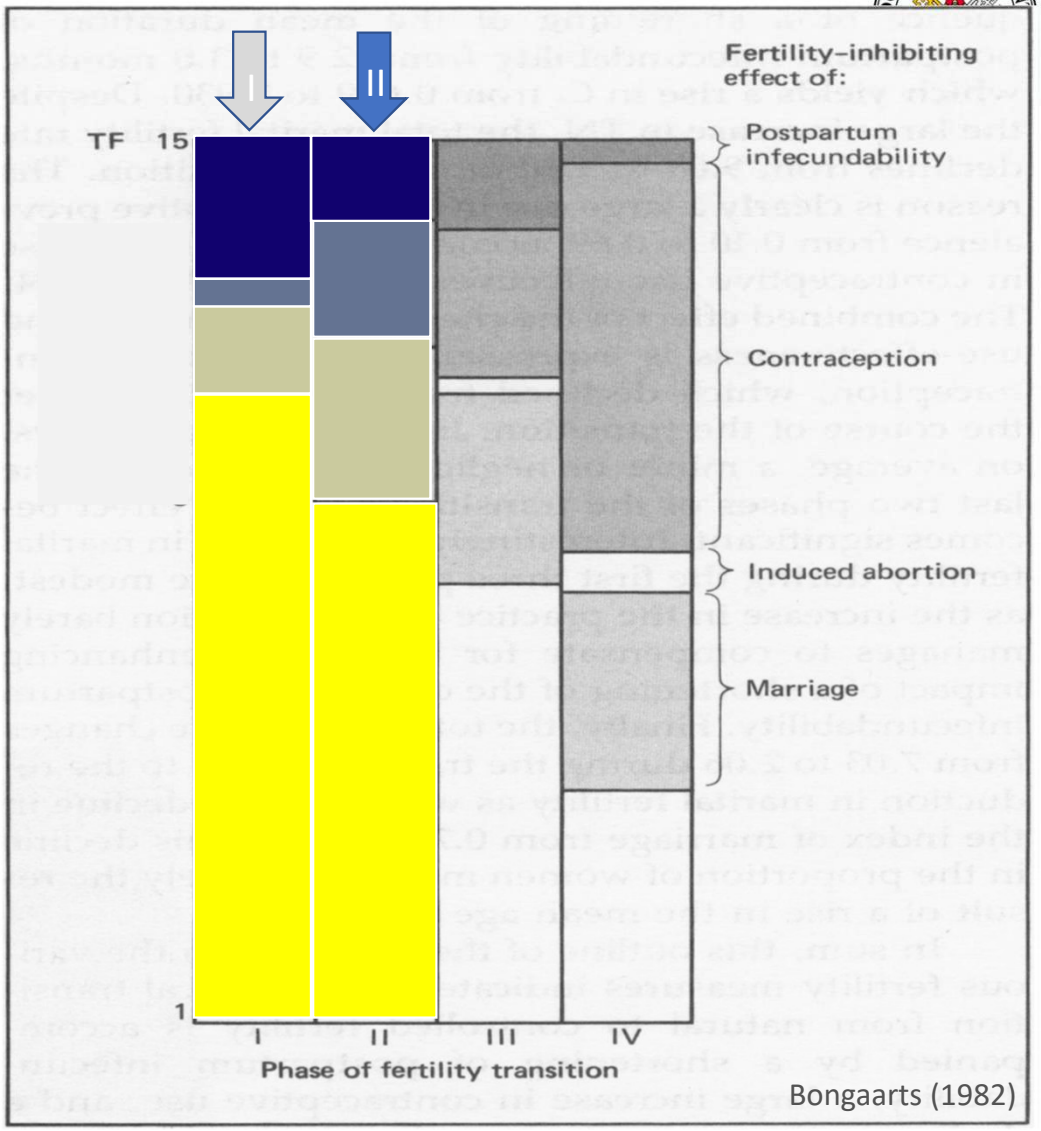
II. TFR 4.5–6.0: Effect of postpartum infecundability decreases as the effect of contraception increases.



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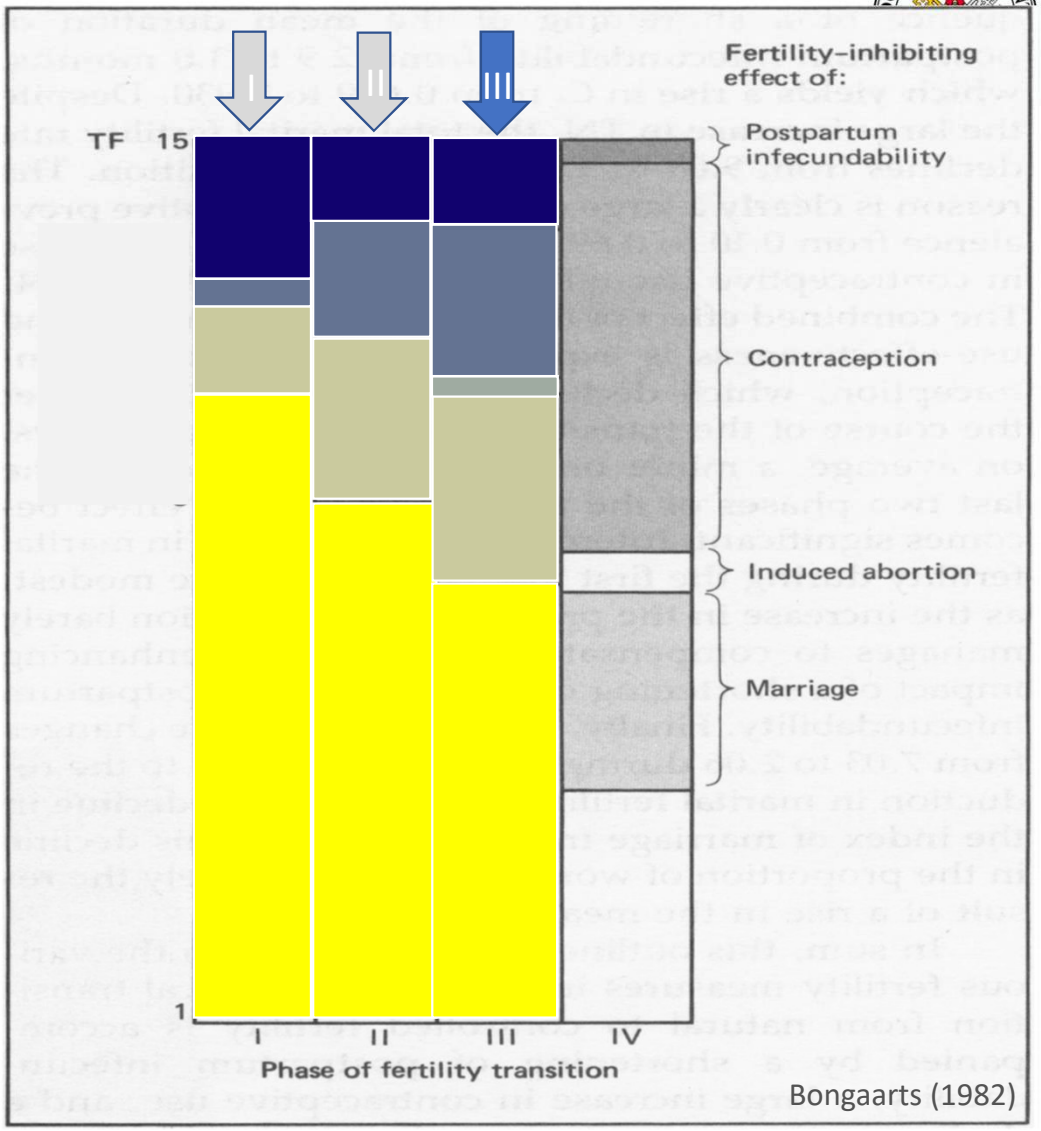
III. TFR 3.0–4.5: Effect of contraception increases compared to Phase II.



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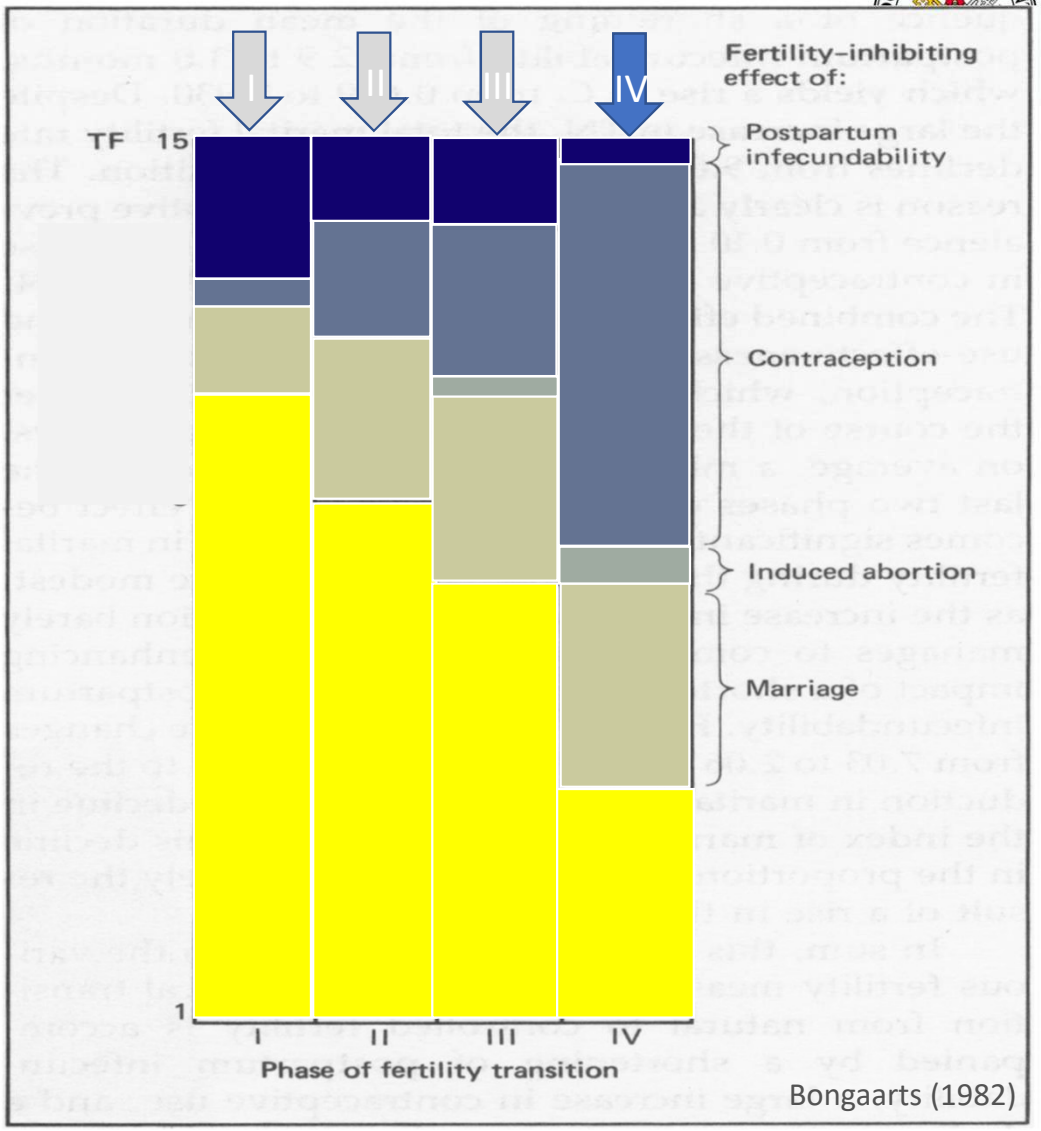
III. TFR 3.0–4.5: Effect of contraception increases compared to Phase II.

IV. TFR less than 3.0: Effect of contraception is the largest, while that of postpartum infecundability is the smallest.



Bongaarts (1982)

Objectives

1. We examine the **patterns** of **fertility transition** in capital cities, other urban areas, and rural areas in SSA.

2. We study the **role of the proximate determinants of fertility** and how their **fertility-inhibiting effects** have contributed to fertility decline and to what extent they vary across subnational areas and phases of the transition.

Outline

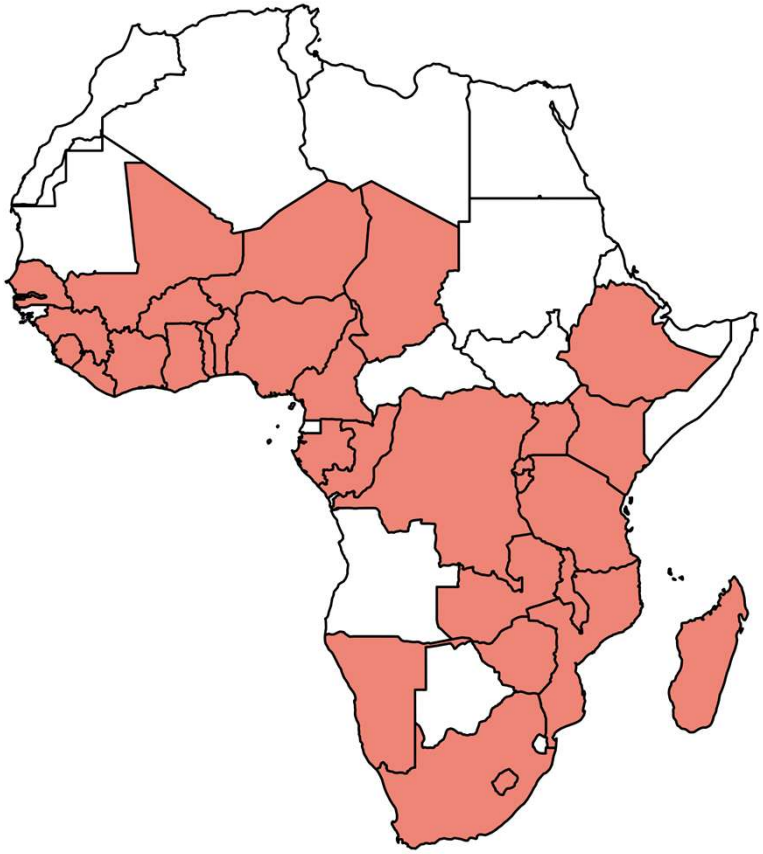
1. Background
2. **Data and methods**
3. Results
4. Conclusions

Data

- We use 148 Demographic and Health Surveys (DHS) from 33 countries

(1986 – 2023):

1. It is possible to identify the capital city or largest city.
2. The have birth histories to compute TFR.
3. Information on marital status, sexual activity, contraceptive use, amenorrhea, postpartum abstinence, and years of education to compute the indices of proximate determinants.



Methods

1. Estimate the proximate determinants of fertility (Bongaarts 2015).

2. Calculate the fertility-inhibiting effect of the proximate determinants (Bongaarts 1982; Bongaarts and Potter 1983).

3. Determine the phase of fertility transition by subnational area (Bongaarts 1982).

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Proximate determinants of fertility

$$TFR = C_m \; x \; C_c \; x \; C_i \; x \; C_a \; x \; TF$$

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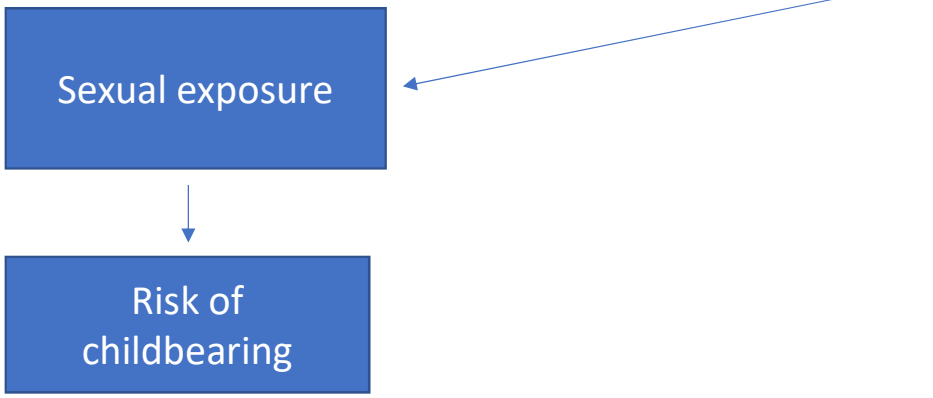

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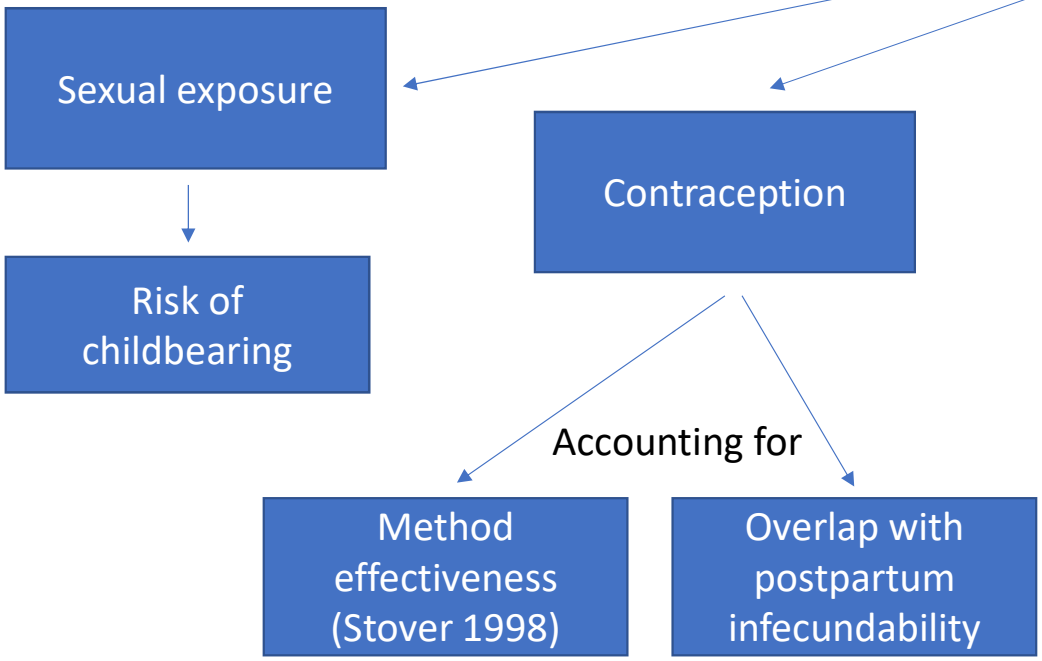

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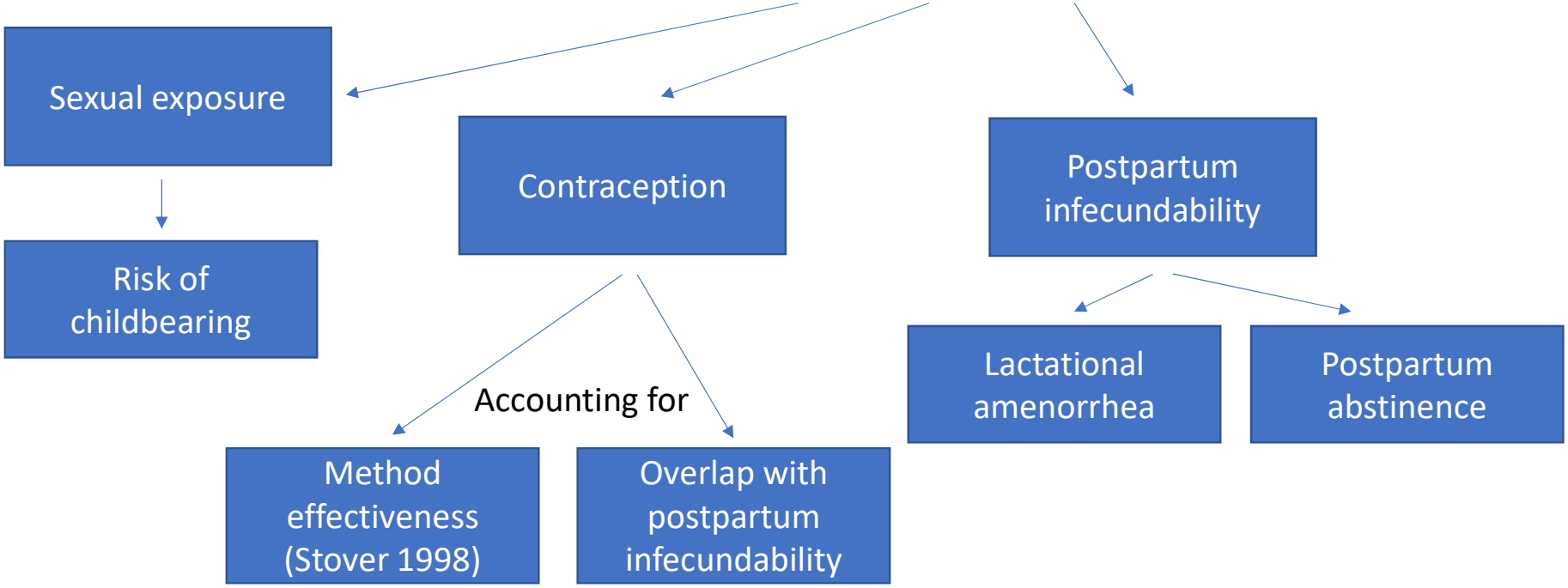

Proximate determinants of fertility

$$TFR = C_m \; x \; C_c \; x \; C_i \; x \; C_a \; x \; TF$$

- Sexual exposure
  - Risk of childbearing
- Contraception
  - Accounting for
    - Method effectiveness (Stover 1998)
    - Overlap with postpartum infecundability
- Postpartum infecundability
  - Lactational amenorrhea
  - Postpartum abstinence
- Abortion
  - Induced abortion (Westoff 2008)

Proximate determinants of fertility

$$TFR = C_m \; x \; C_c \; x \; C_i \; x \; C_a \; x \; TF$$

Calculated as

$$TF = \frac{TFR}{C_m \times C_c \times C_i \times C_a}$$

Average maximum number of children a woman could have in her lifetime in the absence of fertility-inhibiting effects

- Average TF in Bongaarts (2015): 15.4
- Our average TF: 15.8

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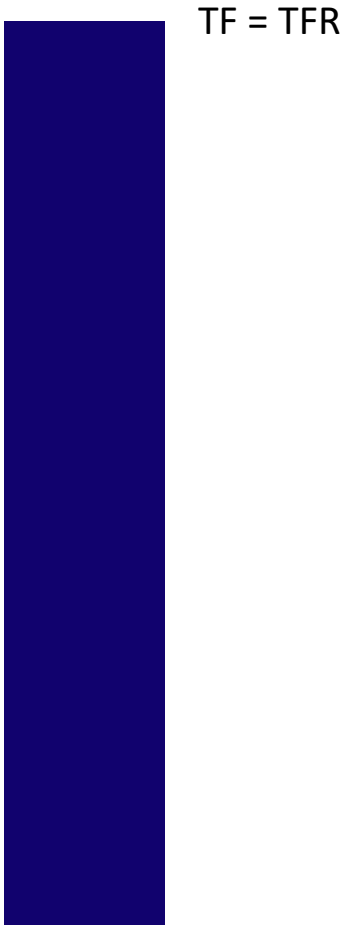
Fertility-inhibiting effects

- Sexual exposure
- Abortion
- Contraception
- Pospartum infecundability



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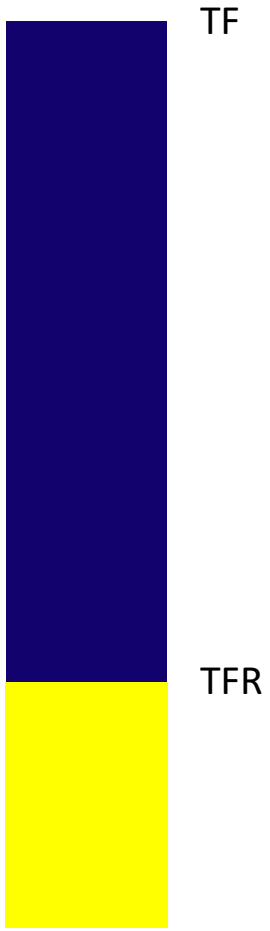
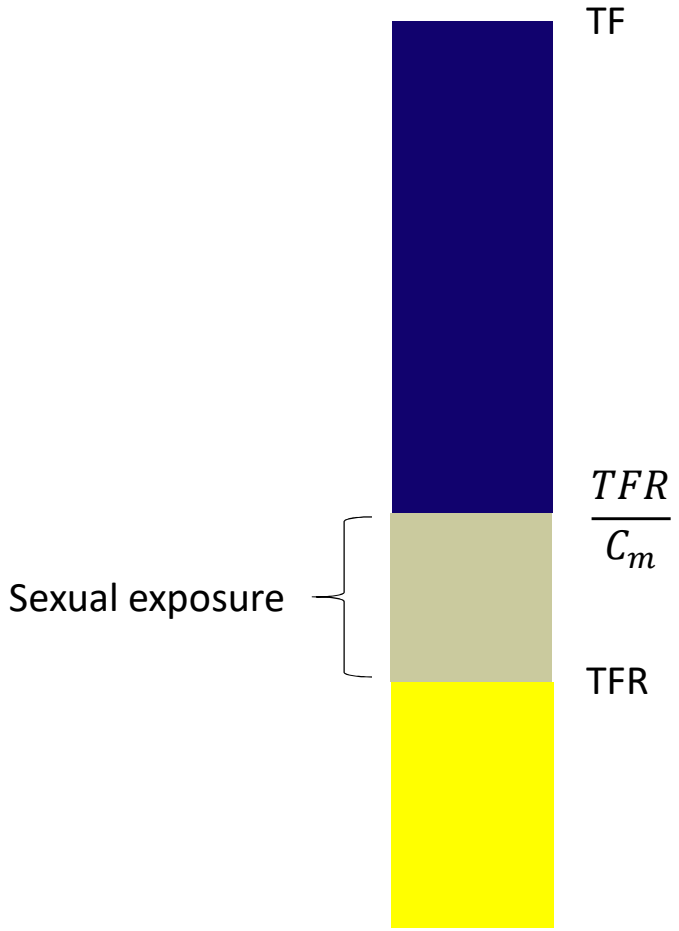


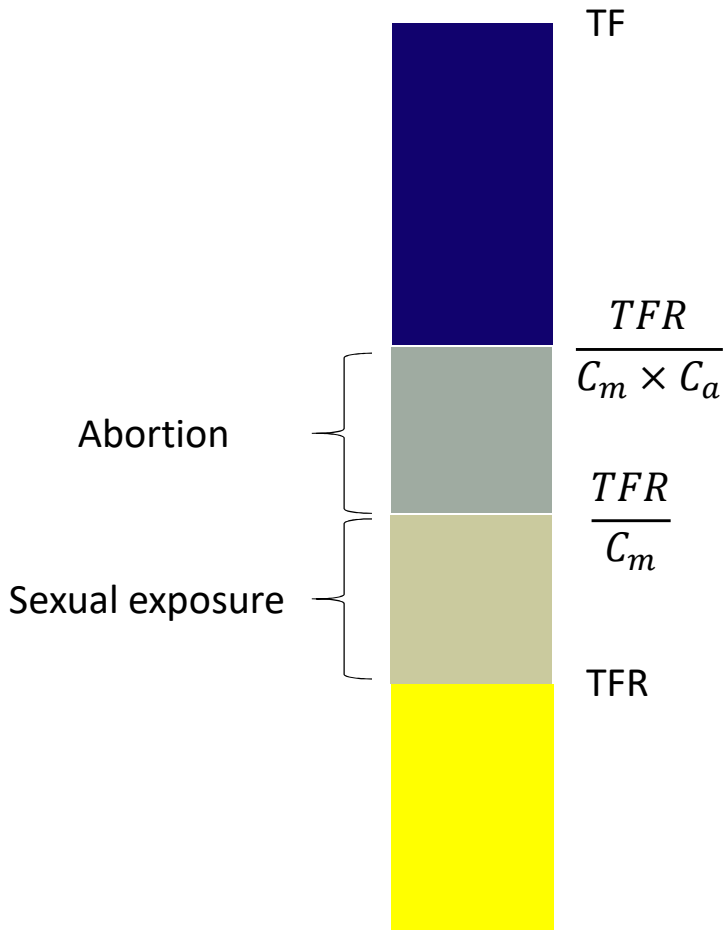
Fertility-inhibiting effects

- Sexual exposure: $\frac{TFR}{C_m} - TFR$
- Abortion
- Contraception
- Pospartum infecundability



Fertility-inhibiting effects

- Sexual exposure: $\frac{TFR}{C_m} - TFR$
- Abortion: $\frac{TFR}{C_m \times C_a} - \frac{TFR}{C_m}$
- Contraception
- Pospartum infecundability



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- Sexual exposure: $\frac{TFR}{C_m} - TFR$
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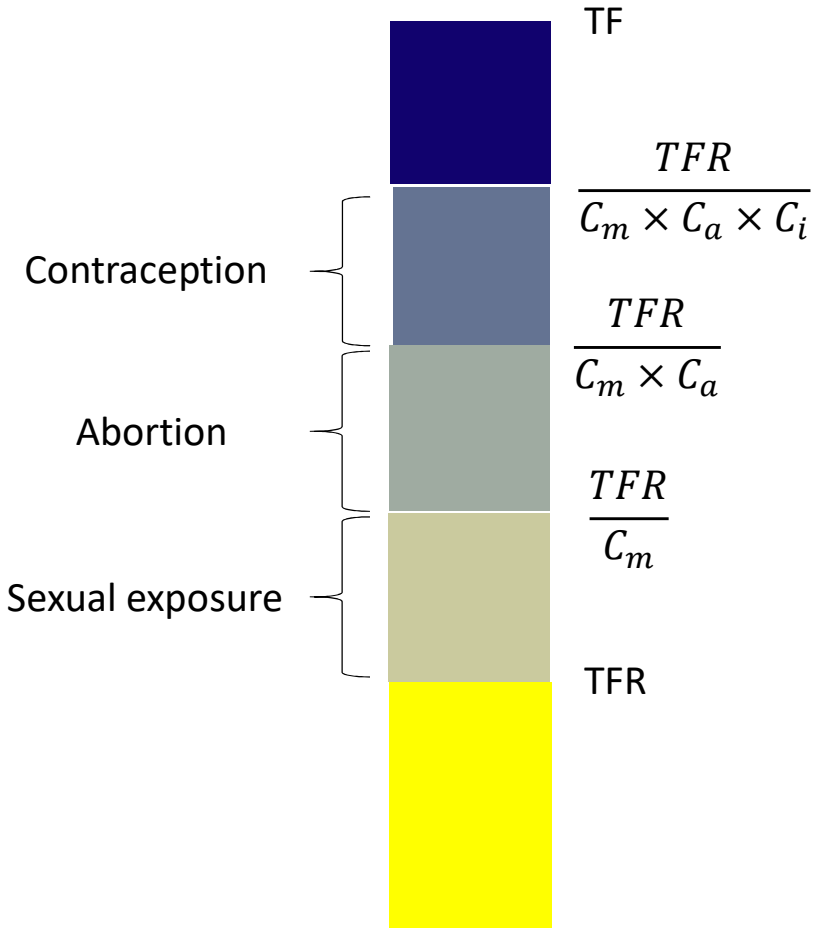
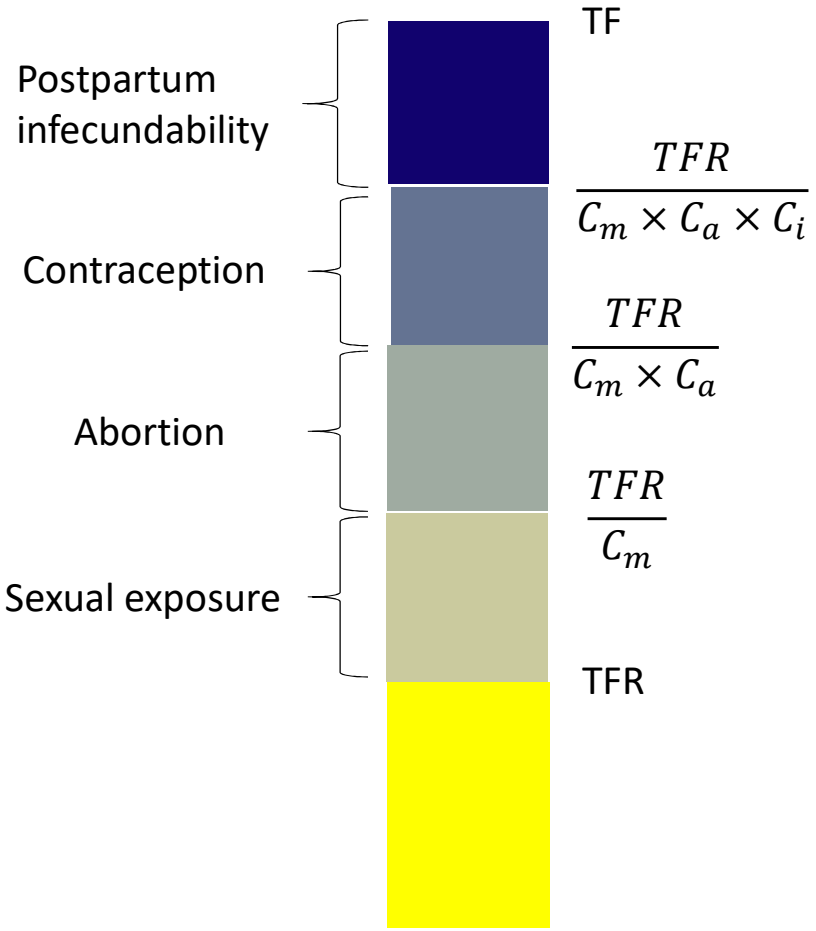
- Contraception: $\frac{TFR}{C_m \times C_c \times C_a} - \frac{TFR}{C_m \times C_a}$
- Pospartum infecundability



Fertility-inhibiting effects

- Sexual exposure: $\frac{TFR}{C_m} - TFR$
- Abortion: $\frac{TFR}{C_m \times C_a} - \frac{TFR}{C_m}$
- Contraception: $\frac{TFR}{C_m \times C_c \times C_a} - \frac{TFR}{C_m \times C_a}$
- Pospartum infecundability: $TF - \frac{TFR}{C_m \times C_a \times C_c}$



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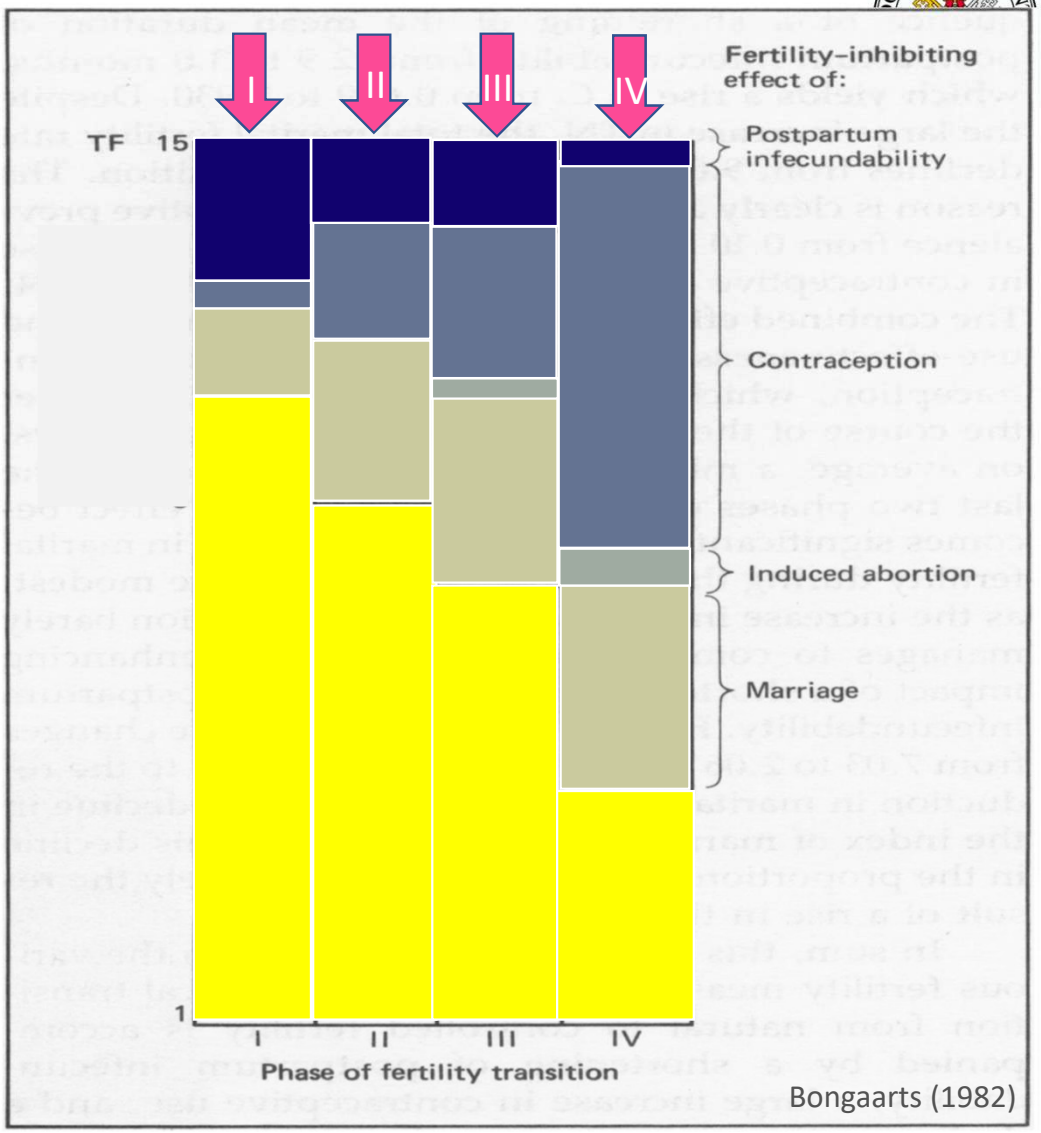

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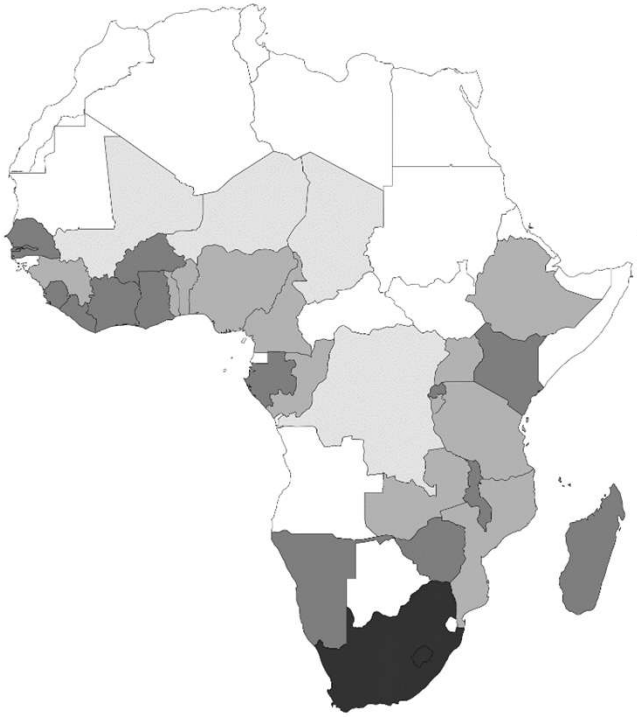
Phase of fertility transition in the most recent survey

Fertility transition occurs as argued by stylized models:

	Capital	Other urban	Rural	National
Phase I	0	1	7	4
Phase II	3	7	22	12
Phase III	16	21	3	15
Phase IV	14	4	1	2

Geographic patterns

National level



Rural areas

Capital cities

Other urban areas

Just to remember…

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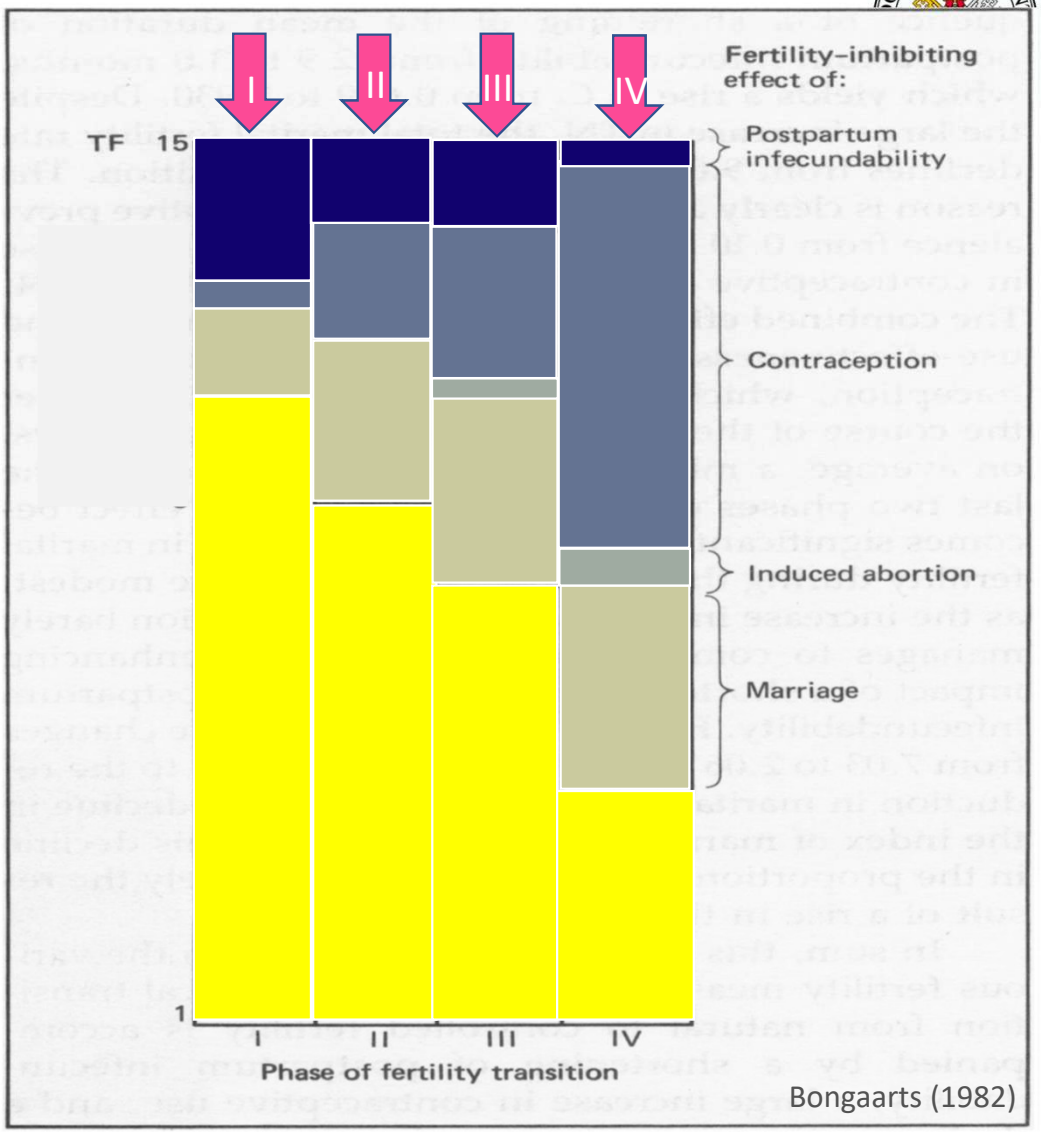

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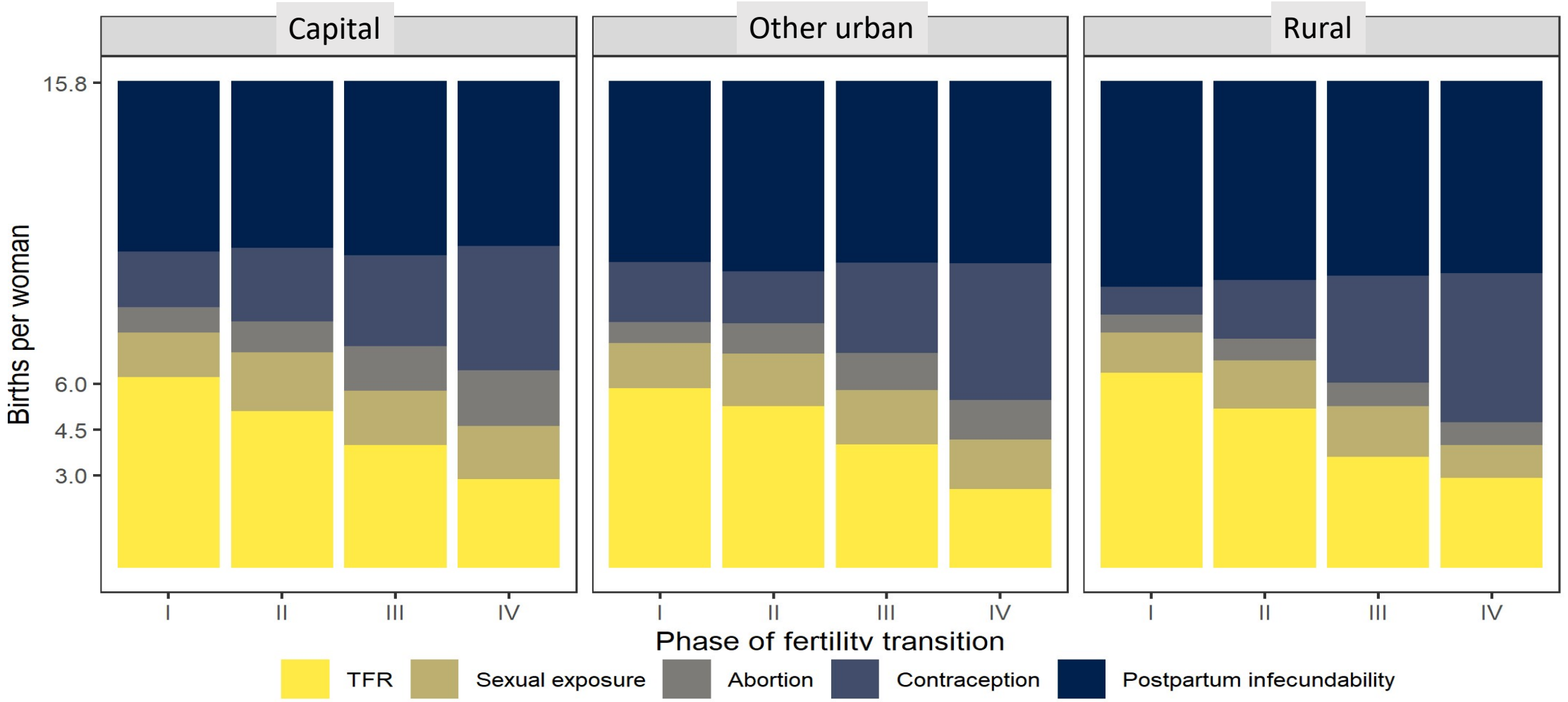
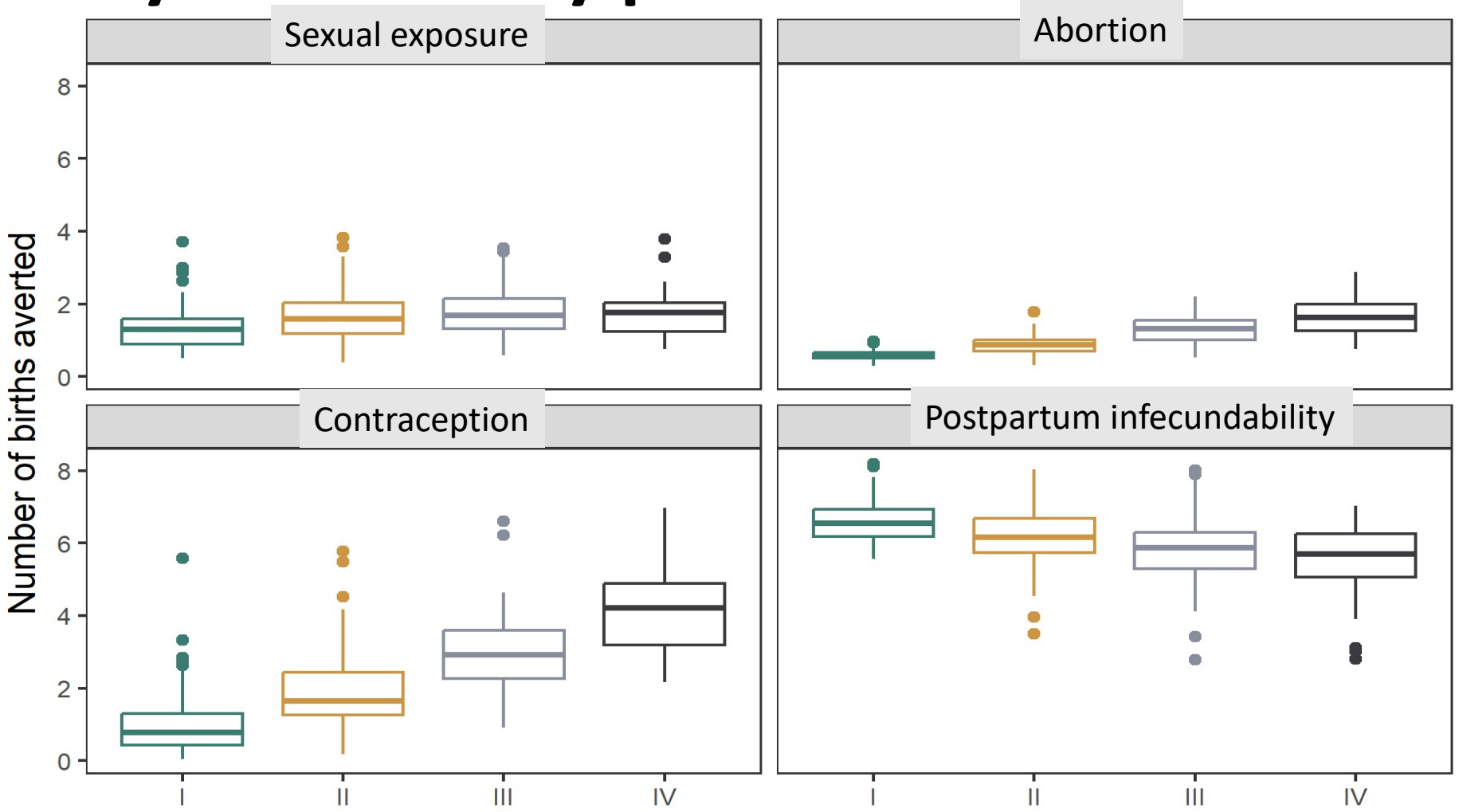
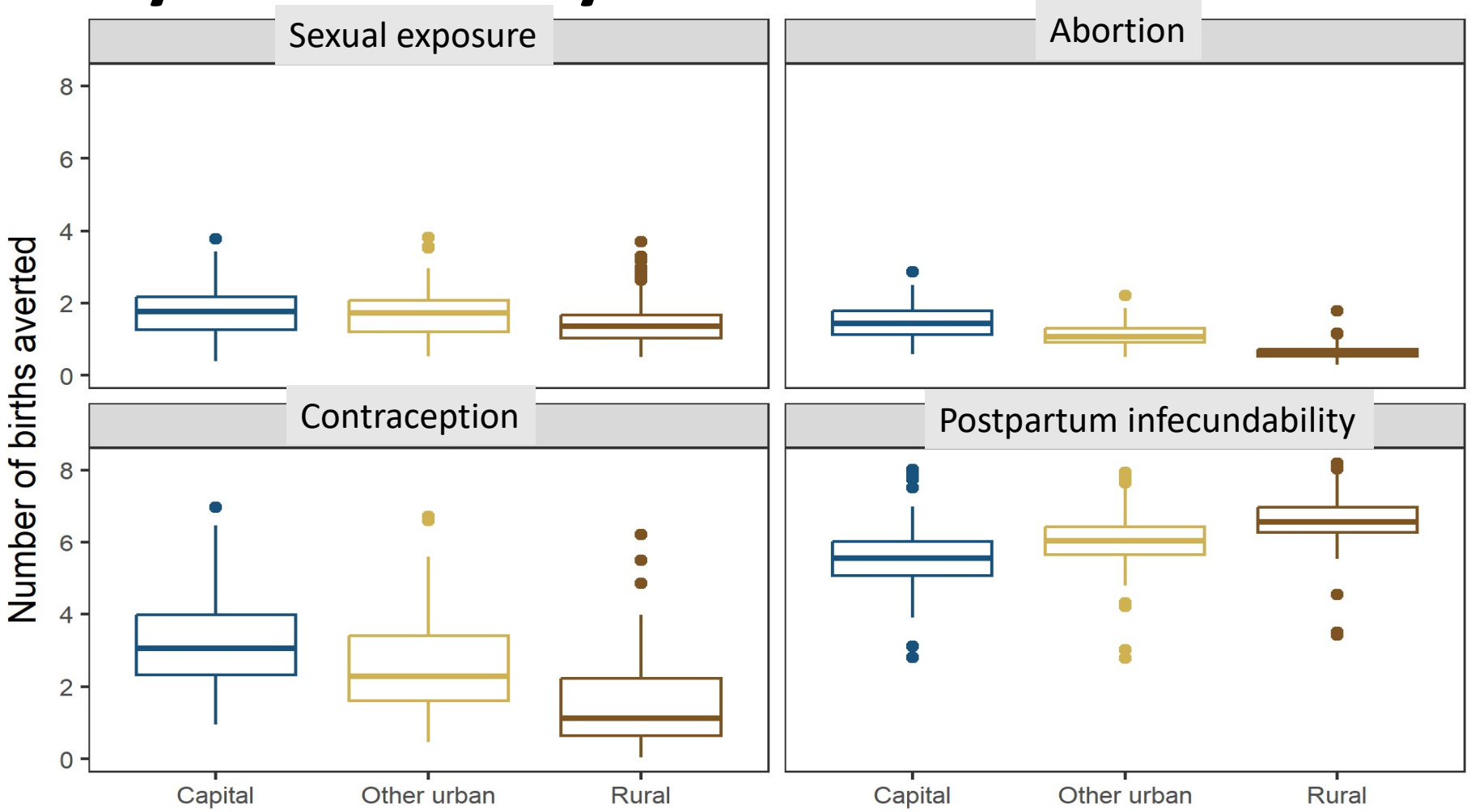
Fertility rates and fertility-inhibiting effects



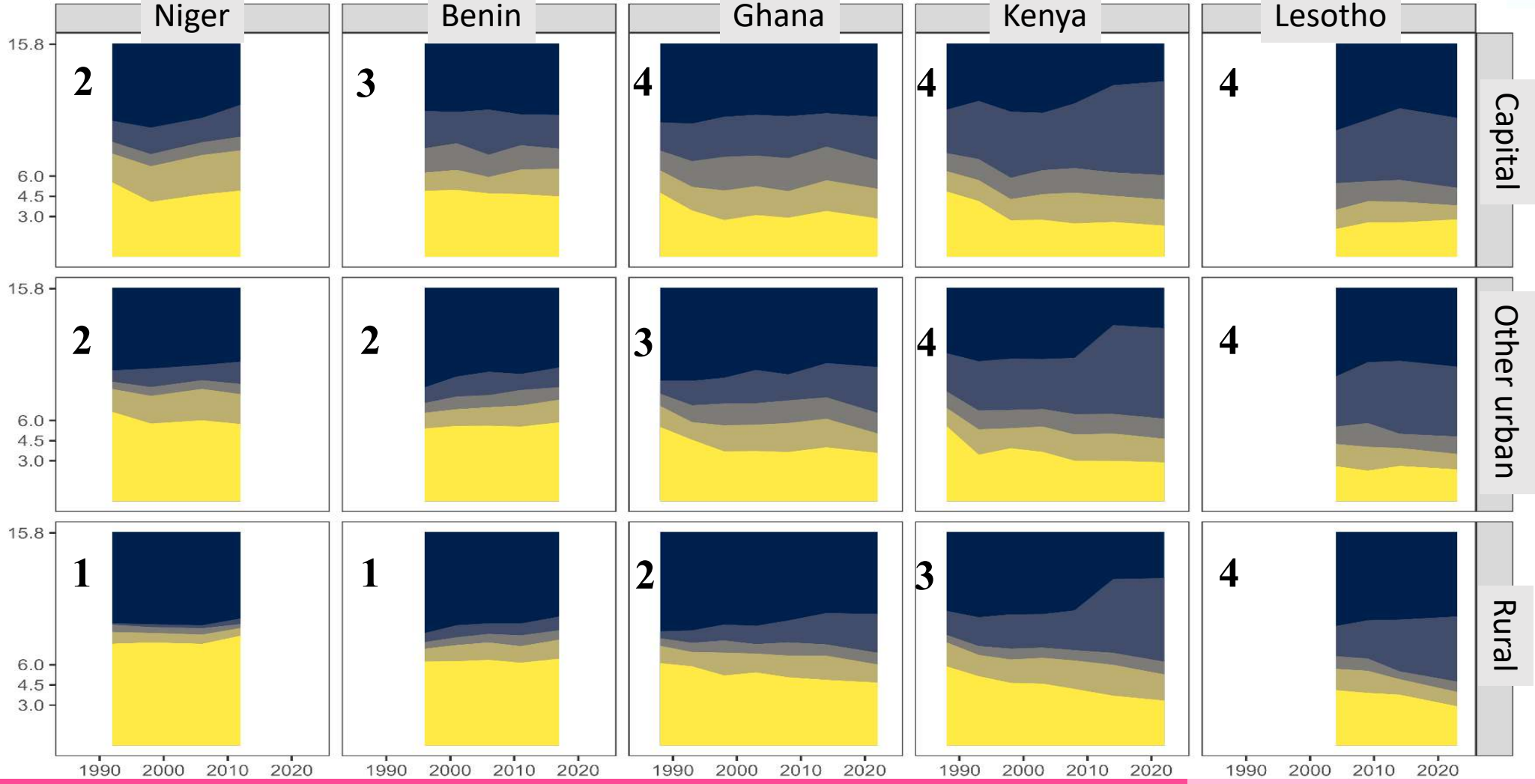
Fertility inhibited by phase of transition



Fertility inhibited by subnational area



Fertility transition in selected countries



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To take away...

1. Fertility transition across subnational areas occurs as argued by stylized models: fertility declines first in capitals.

2. Fertility transition:
   - Capital cities: advanced phases.
   - Other urban areas: mid-phases.
   - Rural areas: early phases.

3. Rural fertility tends to set the fertility pattern at the national level in most countries (composition effect).

To take away...

4. Inhibitory effects of most proximate determinants evolves according to the fertility transition model proposed by Bongaarts (1982):
   - Contraception is the main driver of fertility transition.
   - Abortion is more frequent in capitals.

5. **However, postpartum infecundability:**
   - **It is expected to decrease as transition progresses, but it does not.**
   - **It still has the largest inhibitory effect across subnational areas and phases.**

6. Possibility of further fertility stalls or longer-lasting current stalls?

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Thank you

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