

ETHIOPIAN DEMOGRAPHY AND HEALTH

CHAPTER 4

FERTILITY LEVELS AND TRENDS

Ethiopia's Quarter-Century Fertility Transition, 2000–2024/25

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CHAPTER 4

List of Acronyms and Abbreviations

Fertility Levels and Trends in Ethiopia, 2000–2024/25

Acronym	Full term
ASFR	Age-Specific Fertility Rate
CBR	Crude Birth Rate
CEB	Children Ever Born
CI	Confidence Interval
DHS	Demographic and Health Survey
EDHS	Ethiopian Demographic and Health Survey
ESS	Ethiopian Statistical Service
GFR	General Fertility Rate
GRR	Gross Reproduction Rate
ICF	ICF (organization name; formerly Inner City Fund)
MAC	Mean Age at Childbearing
NRR	Net Reproduction Rate
P/F Ratio	Parity-to-Fertility Ratio
PPR	Parity Progression Ratio
SD	Standard Deviation
SE	Standard Error
SNNPR	Southern Nations, Nationalities and Peoples' Region
TFR	Total Fertility Rate
UN	United Nations
UNFPA	United Nations Population Fund
WHO	World Health Organization

Geographic note. Historical SNNPR is retained in the age-specific fertility analysis; the total fertility rate analysis presents four successor regions. The methodological preface explains this distinction.

CHAPTER 4 · FERTILITY LEVELS AND TRENDS

Introduction

Ethiopia's quarter-century fertility transition, 2000–2024/25

Fertility as a demographic and public-health question

Fertility occupies a central position in the study of population change. The number and timing of births shape the age structure of a population, the demand for reproductive, maternal, newborn, and child-health services, household dependency, and the pace at which future generations enter schools and labor markets. Yet a national fertility rate is not simply a measure of population growth: it is a period summary of childbearing across reproductive ages, influenced by the timing of births as well as by the number of children women ultimately have. Distinguishing fertility levels from fertility schedules, and period indicators from cohort experience, is therefore essential to interpreting demographic change (United Nations, Department of Economic and Social Affairs, Population Division [UN DESA], 2024).

The Ethiopian setting

Ethiopia provides an especially important setting for examining fertility change because its population is geographically, socially, and economically heterogeneous. National averages may conceal markedly different patterns across regions, between predominantly urban and rural settings, and across reproductive ages. The Ethiopian Demographic and Health Survey (EDHS) program supplies a series of nationally representative household surveys with birth histories and other reproductive-health information that support systematic examination of these differences. The Ethiopian Statistical Service (ESS) maintains the reports for the 2000, 2005, 2011, 2016, and 2024–25 rounds, which together form the observational backbone of this chapter (ESS, n.d.).

Fertility transitions are not uniform

The wider demographic literature cautions against treating fertility transition as a single, uniform sequence. Across sub-Saharan Africa, the onset, pace, and level of fertility decline have varied substantially. Explanations invoke changes in schooling, child survival, desired family size, marriage and union patterns, access to contraception, and the diffusion of reproductive preferences and behaviors; the relative importance of these mechanisms differs by context (Bongaarts, 2017a). Evidence that contraceptive use is associated with fertility change also requires careful interpretation because reproductive exposure, postpartum infecundability, and other proximate determinants can affect the relationship (Bongaarts, 2017b). These perspectives provide an interpretive framework, not a license to infer causal mechanisms from the descriptive regional trends presented here.

What a quarter-century comparison can establish

This chapter traces observed fertility between the 2000 and 2024–25 EDHS rounds, with intermediate observations in 2005, 2011, and 2016 where certified total fertility rate (TFR) estimates are available. In the research-derived national series used here, TFR fell from 5.52 to 4.05 births per woman—an absolute decline of 1.47 births, or approximately 26.7 percent. These are estimates from the chapter’s validated analytical series and should not be confused with an unqualified quotation of a published EDHS table. More important than the national endpoint alone is the diversity of regional trajectories: the same national reduction can coexist with faster declines, slower declines, or increases in particular regions. This chapter therefore examines national change and regional differentiation as inseparable dimensions of Ethiopia’s fertility transition.

A research program behind the present chapter

The empirical analysis presented here emerged from a broader twelve-chapter investigation of Ethiopia’s demographic and health transformation over approximately twenty-five years. Chapter 1 of that research program concentrated on fertility measurement and historical change. It assembled and checked national and regional TFR estimates, examined age-specific fertility rates (ASFR), and documented decisions needed to compare survey results across time. The present chapter translates that technical work into an accessible account for readers. Its tables and figures are drawn from the certified historical research outputs rather than from illustrative curves or projections. Internal spreadsheet names and validation files serve as an audit trail; the substantive data sources remain the EDHS surveys and their underlying records.

Two geographic frameworks—and why they differ

The TFR analysis is organized around Ethiopia’s 14 current regional categories, with historical estimates harmonized to the successor-region framework used for the 2024–25 analysis. This is particularly consequential for the former Southern Nations, Nationalities and Peoples’ Region (SNNPR), whose historical territory is represented by Sidama, Central Ethiopia, South Ethiopia, and South West Ethiopia in the harmonized TFR series. Such estimates depend on the geographic reconstruction and validation undertaken in the larger fertility research, not merely on renaming a historical SNNPR total. By contrast, the available certified ASFR tables cover ten historical regions plus historical SNNPR and provide the 2000 and 2024–25 endpoints. They do not provide separately validated age-specific schedules for each of the four successor regions. Accordingly, the ASFR analysis retains historical SNNPR as a single analytical geography and explicitly distinguishes it from the successor-region TFR results.

Why age-specific fertility matters

TFR indicates the overall intensity of fertility under a given period’s age-specific rates, but it cannot identify whether change is concentrated among adolescents, women in their twenties, or women at later reproductive ages. ASFR schedules reveal the age pattern and timing of childbearing and permit decomposition of the contribution of age groups to differences in period TFR. These distinctions

matter when considering adolescent reproductive health, birth spacing, and service needs. They also impose limits: an ASFR schedule does not, by itself, establish age at first birth, completed cohort fertility, parity progression, or individual-level intentions. Those outcomes require other survey variables or longitudinal information (UN DESA, 2024).

Purpose and organization

The chapter has four linked objectives: to explain the principal measures of fertility and their interpretation; to document national fertility change across five EDHS rounds; to compare regional TFR trajectories using the harmonized 14-region framework; and to examine the age pattern of fertility using the 11 historical regional categories supported by the ASFR evidence. Subsequent sections address birth timing, parity progression as a conceptual and data-requirement question, and the implications of survey quality and geographic comparability. The analysis deliberately ends with the observed 2024–25 survey. It does not forecast fertility or present 2030 projections. Its central question is historical and empirical: how did fertility change over a quarter-century, for whom, at what ages, and in which parts of Ethiopia?

Methodological Preface: From a Quarter-Century Research Program to the Fertility Evidence

A reader's guide to the origin, validation, and geographic comparability of the estimates | October 2026

The research program behind this chapter

This chapter draws on a broader twelve-chapter investigation of Ethiopia's demographic and health transformation over approximately twenty-five years. That research program used successive Ethiopian Demographic and Health Surveys (EDHS) to reconstruct and compare changes in fertility, family planning, maternal and child health, nutrition, and other population-health indicators. Rather than treating published tables from different survey years as automatically comparable, the project emphasized reproducing official survey results, checking denominators and survey definitions, and examining regional boundary changes before interpreting trends. The present chapter is a public-facing synthesis of the fertility component of that larger undertaking—not a new independent survey.

Chapter 1 of the twelve-chapter research work focused specifically on fertility. It developed national and regional estimates of total fertility rates (TFR), age-specific fertility rates (ASFR), and related measures from EDHS evidence. Five survey rounds—2000, 2005, 2011, 2016, and 2024–25—provide the historical spine of the TFR analysis. The ASFR comparison presented in the Part II supplement uses the two available endpoint schedules, 2000 and 2024–25. These are repeated cross-sectional surveys, not longitudinal observations of the same women.

How estimates became usable evidence

The underlying research distinguished the original EDHS survey records and official publications from the project’s derived analytical tables. Survey weights, age-specific birth histories, exposure periods, and regional identifiers were used to calculate or check fertility measures. Derived outputs were subjected to consistency and validation checks against the corresponding official survey estimates before being retained for the chapter. The national TFR of 5.52 births per woman in 2000 and 4.05 in 2024–25, for example, describes a 1.47-birth decline (26.7%) over the observed period.

The technical workbook cited later in Section 4.8 is therefore an internal evidence register, not a publication that readers are expected to know. Its “observed” worksheet stores the validated historical TFR estimates—national plus 14 current regions across five rounds (75 geography–survey observations)—along with uncertainty and audit information. The workbook was originally developed within a wider demographic research workflow; this chapter uses only its historical observations, not its projection or model-testing components. The authoritative primary sources remain the EDHS datasets and their survey documentation.

Why regional geography required special treatment

Ethiopia’s administrative geography changed during the study period. In particular, the former Southern Nations, Nationalities and Peoples’ Region (SNNPR) was reorganized into Sidama, South West Ethiopia, South Ethiopia, and Central Ethiopia. A historical survey tabulation labeled “SNNPR” is not directly equivalent to any one of these four present-day regions. Long-run regional comparisons therefore require an explicit choice of geographic framework and sufficient geographic information to support it.

Why TFR could be presented for four successor regions

For the TFR analysis, the larger Chapter 1 research workflow produced a harmonized historical panel on the 14-region geography used in the 2024–25 survey. This permitted Sidama, South West Ethiopia, South Ethiopia, and Central Ethiopia to appear separately in the five-round regional trajectories, rather than assigning the former SNNPR aggregate to all four. In methodological terms, the task required translating earlier survey geography into the later successor-region framework and recomputing or validating fertility estimates for the corresponding populations. The resulting regional TFR series was then carried into the project’s certified historical panel and the regional profiles in Section 4.5.

This is a substantive reconstruction, not a relabeling exercise. It depends on the geographic allocation and validation decisions made in the underlying research. The present chapter reports the certified results; the exact historical cluster-to-successor crosswalk, any ambiguous border assignments, and the relevant validation logs should be preserved with the technical archive. Without those supporting records in this brief, it would be inappropriate to claim that every geographic assignment can be independently audited here.

Why ASFR retained historical SNNPR

The ASFR source tables made available for this chapter followed a different, historical regional framework: ten individual historical regions plus SNNPR, each with seven reproductive-age groups.

They provided age-specific rates and changes for 2000 and 2024–25, but did not supply separately certified, age-by-age schedules for the four SNNPR successor regions. Splitting one historical SNNPR schedule into four schedules would require more than the aggregate TFR of each successor: it would require correctly allocated age-specific births and woman-years of exposure, consistent weights, and adequate sample support for every age group. A single TFR cannot uniquely determine the seven ASFRs from which it is formed.

Accordingly, the Part II ASFR supplement retains SNNPR as one historical analytical unit and places it alone in geographic Panel E, alongside the national reference. Panels A–D retain the other ten historical regions. This deliberate choice avoids presenting unverified successor-region ASFR curves as empirical findings. Furthermore, the aggregate files alone do not establish that the 2024–25 SNNPR endpoint was perfectly reconstructed on the former region’s boundaries; any endpoint comparison involving historical SNNPR must be interpreted with that qualification.

Reading the two geographic frameworks together

Measure	Geographic basis	Survey coverage
TFR	National + 14 current regions; four SNNPR successors separated	2000, 2005, 2011, 2016, 2024–25
ASFR	National reference + 11 historical regions; SNNPR retained	2000 and 2024–25 endpoints

The two analyses answer complementary questions: TFR shows how overall fertility levels changed across the present-day regional map; ASFR shows how the age pattern of childbearing changed within the historical geographies supported by the available age-specific evidence. Their regional labels should not be interchanged. Neither analysis projects fertility beyond the 2024–25 EDHS.

Primary documentation

Ethiopian Statistical Service and predecessor statistical agencies, with ICF: Ethiopia Demographic and Health Surveys, 2000, 2005, 2011, 2016, and 2024–25. See the Ethiopian Statistical Service survey archive (ess.gov.et/population/) and the 2024–25 EDHS detailed report (ess.gov.et/download/ethiopia-demographic-and-health-survey-edhs-2024-25-detail-report/).

PART I. 4.1 Concepts, measures, and data

Fertility is the actual occurrence of live births, distinguished from fecundity (biological capacity to reproduce). Period measures describe births during a specified observation window; cohort measures follow women born in the same period through their reproductive lives. The total fertility rate (TFR) is a synthetic-period measure, not the observed completed family size of any real cohort.

For survey-derived rates, numerators, exposure denominators, sample design, reference period, and geographic boundaries must be harmonized. The certified series used here defines TFR from seven

five-year age-specific fertility rates over months 1–36 preceding interview; uncertainty is based on the workbook’s certified jackknife estimates.

4.2 Fertility formulas and interpretation

In the equations below, B is the number of live births during a period; P is the mid-period total population; W is the number of women aged 15–49; B_x and E_x are births and woman-years of exposure in age group x; a_x is its midpoint; p_f is the proportion of births that are female. ASFR is displayed per 1,000 woman-years unless otherwise indicated.

CBR	$\frac{\text{Live births (B)}}{\text{Mid-period population (P)}} \times 1,000$	Births per 1,000 population
GFR	$\frac{\text{Live births (B)}}{\text{Women aged 15–49 (W)}} \times 1,000$	Births per 1,000 women aged 15–49
ASFR _x	$\frac{\text{Live births to women aged x (B}_x\text{)}}{\text{Woman-years of exposure aged x (E}_x\text{)}} \times 1,000$	Seven age groups: 15–19 to 45–49
TFR	$\frac{5 \times \Sigma \text{ASFR}_x}{1,000}$	Births per woman; sum over seven age groups
GRR	$\frac{\text{TFR} \times \text{female births (p}_f\text{)}}{1}$	Daughters per woman, ignoring mortality
NRR	$\frac{5 \times \Sigma (f_x \times L_x)}{1}$	f_x : female births per woman-year; L_x : female survival/exposure factor

MAC

$$\frac{\sum (a_x \times ASFR_x)}{\sum ASFR_x}$$

Mean age at childbearing
(period)

NRR requires a consistently defined female life-table survivorship schedule and the appropriate age-group survival adjustment; it cannot be calculated from TFR alone. Likewise, CBR and GFR require compatible population or exposure denominators and cannot be inferred from the TFR panel.

4.3 Cohort fertility, quantum, and tempo

Completed cohort fertility summarizes births accumulated by women of a given birth cohort through the end of reproductive life. Parity progression ratios describe the conditional likelihood of proceeding from parity k to k+1. “Quantum” concerns the number of births; “tempo” concerns their timing. A decline in period TFR may reflect both reduced eventual family size and shifts in childbearing age. The certified historical TFR panel does not identify these components separately; cohort and timing claims therefore require additional certified birth-history outputs.

CFR

$$\frac{\sum \text{cohort age-specific births/exposure} \times 5}{1}$$

Completed cohort fertility
across reproductive ages

PPR_k

$$\frac{\text{Women reaching parity } k+1}{\text{Women reaching parity } k}$$

Cohort progression probability,
with censoring addressed

4.4 Ethiopia’s national fertility transition, 2000–2024/25

Across the five certified EDHS rounds, national TFR declined from 5.52 births per woman in 2000 to 4.05 in 2024–25, an absolute reduction of 1.47 births per woman (26.7%). The path was not uniform: change was modest between 2000 and 2005, stronger by 2011, and continued through 2016 and 2024–25. These observations establish the direction and magnitude of the quarter-century transition without assuming a smooth annual trajectory.

EDHS round	TFR	95% CI	Unweighted N	Clusters
2000	5.52	5.30–5.74	15,367	539
2005	5.41	5.13–5.69	14,070	535
2011	4.80	4.50–5.10	16,515	596
2016	4.56	4.26–4.87	15,683	643
2024-25	4.05	3.84–4.26	21,395	797

Table 4.1. Certified national period total fertility rates. Source: uploaded PROSPECTS2050_02_F01 workbook, worksheet 03_OBSERVED. N and clusters are diagnostic survey quantities, not the number of births.

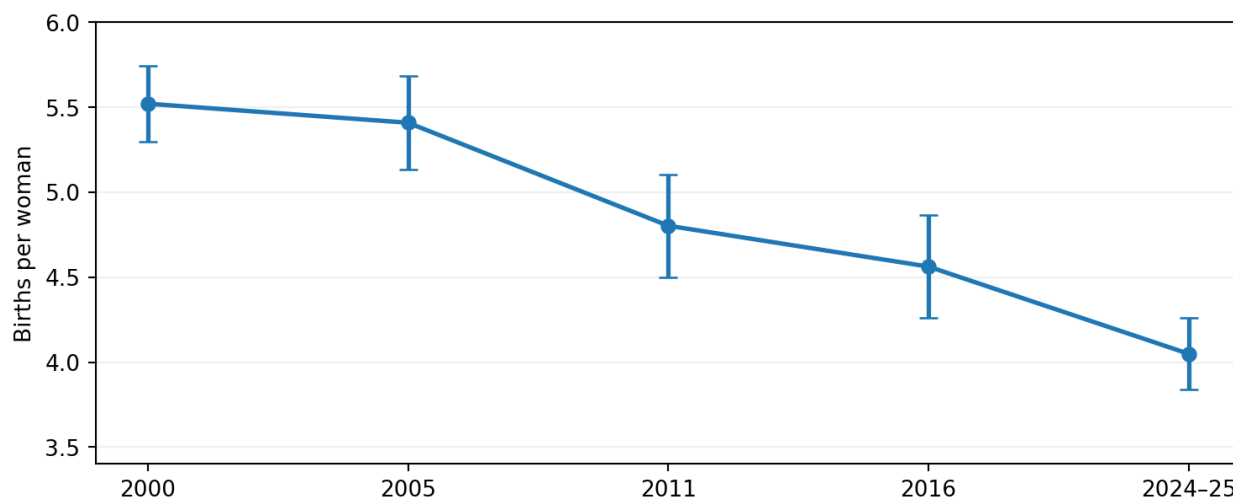


Figure 4.1. National TFR, EDHS 2000–2024/25, with certified 95% confidence intervals. Survey points are joined for visual continuity only; intermediate years are not estimated.

Between successive survey rounds, the observed changes were 2000–2005: -0.11, 2005–2011: -0.61, 2011–2016: -0.24, 2016–2024-25: -0.51 births per woman. Because intervals differ in duration, these are interval changes, not comparable annual rates.

Methodological safeguards and limitations

The 2024–25 round is treated as a survey period, not a single calendar-year estimate for 2025. The five surveys are discrete observations; statistical uncertainty, regional harmonization, conflict-related fieldwork constraints, and the survey design require explicit consideration. A national trend alone does not establish causal explanations for fertility decline. No urban–rural, age-specific, parity, or cohort numerical claims are derived from the TFR-only worksheet.

PART I synthesis and transition

Ethiopia experienced a substantial but incomplete fertility transition during the first quarter of the twenty-first century. Part II will compare each of the 14 current regions against this certified national baseline, with a separate observed-only regional trend graph and profile for each geography.

PART II. Regional Fertility Trajectories, 2000–2024/25

4.5. Regional fertility levels and trends

This installment examines the certified period total fertility rate (TFR) in each of Ethiopia’s 14 current regions, compared with the national series. Each trajectory contains five observed EDHS rounds (2000, 2005, 2011, 2016, and 2024–25). No projections are included. Historical survey

geographies were reconstructed into the successor-region framework in the certified analytical panel; these are harmonized estimates rather than claims that current boundaries existed in 2000.

TFR is expressed as births per woman. Absolute change is the 2024–25 estimate minus the 2000 estimate; percentage change divides that difference by the 2000 estimate. Differences between a region and the national rate are in births per woman. Sampling uncertainty and unequal survey intervals limit causal and statistical interpretations of apparent reversals.

Table 4.5.1. Certified TFR by region and EDHS round

Geography	2000	2005	2011	2016	2024–25	Δ 2000–25	Δ %
National	5.52	5.41	4.80	4.56	4.05	-1.47	-26.7%
Tigray	5.34	5.13	4.56	4.69	4.63	-0.72	-13.4%
Afar	4.41	4.93	4.95	5.50	5.85	+1.44	+32.5%
Amhara	5.51	5.08	4.15	3.73	3.81	-1.70	-30.9%
Oromia	6.07	6.18	5.64	5.38	4.20	-1.87	-30.8%
Somali	5.07	5.96	7.07	7.21	6.45	+1.39	+27.4%
Benishangul-Gumuz	5.02	5.19	5.20	4.37	4.17	-0.85	-16.9%
Central Ethiopia	5.22	5.19	4.69	4.02	4.47	-0.75	-14.4%
Sidama	5.80	6.16	4.73	3.30	3.03	-2.77	-47.8%
South Ethiopia	5.56	5.26	5.28	5.22	4.63	-0.93	-16.8%
South West Ethiopia	6.19	6.53	5.12	4.77	3.88	-2.30	-37.3%
Gambella	4.39	4.00	3.95	3.47	3.87	-0.52	-11.8%
Harari	4.20	3.77	3.82	4.05	3.32	-0.89	-21.1%
Addis Ababa	1.84	1.38	1.51	1.82	2.31	+0.47	+25.4%
Dire Dawa	3.46	3.62	3.36	3.10	3.35	-0.12	-3.3%

Source: Authors Certified historical panel, PROSPECTS2050_02_F01 workbook, worksheet 03_OBSERVED (75 observations). Changes calculated from unrounded certified estimates; displayed values rounded.

Regional profiles and comparisons with the national series

4.5.1 Tigray

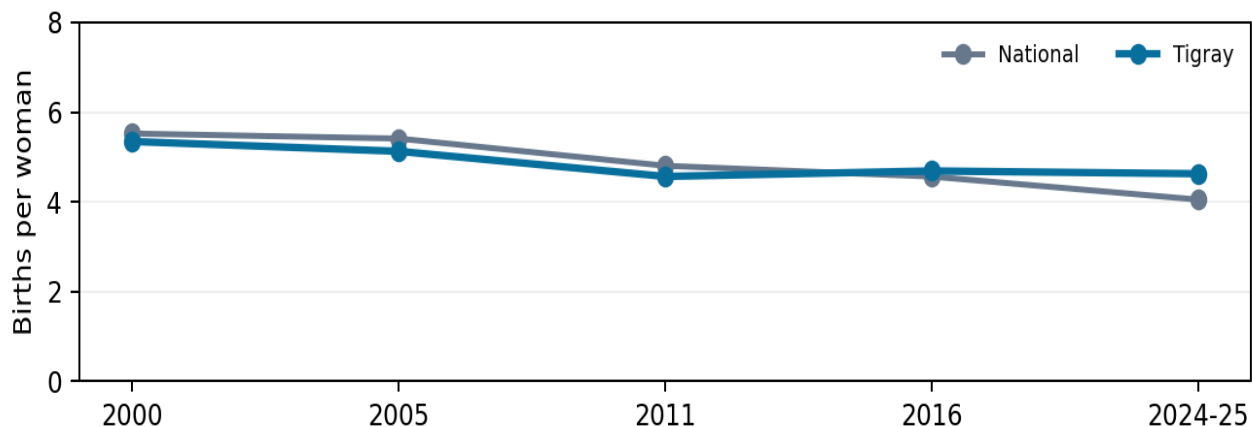


Figure 4.5.1. Tigray and national total fertility rates, five EDHS rounds, 2000–2024/25. Source: certified 03_OBSERVED panel.

Tigray recorded 5.34 births per woman in 2000 and 4.63 in 2024–25, a 0.72-birth decline (13.4%). The national TFR fell from 5.52 to 4.05 (–26.7%). In 2000, Tigray was 0.18 births below the national rate; by 2024–25, it was 0.58 births above the national rate.

The largest observed interval change occurred in 2005–2011 (–0.56 births per woman). Intervals with increases of more than 0.05 births per woman were 2011–2016. The 2024–25 gap from the national estimate is +0.58 births per woman (regional minus national). These descriptive contrasts should not be interpreted as statistically significant without evaluating the reported survey uncertainty and covariance.

4.5.2 Afar

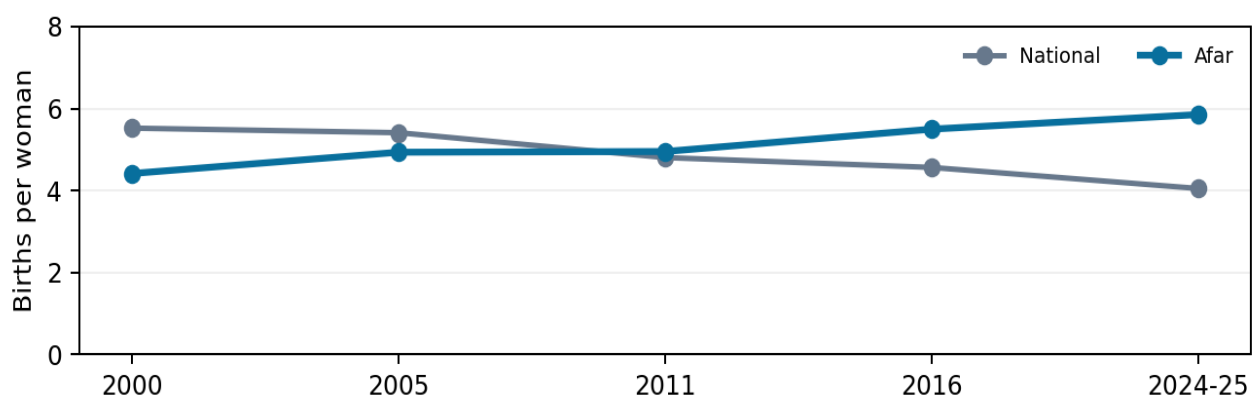


Figure 4.5.2. Afar and national total fertility rates, five EDHS rounds, 2000–2024/25. Source: certified 03_OBSERVED panel.

Afar recorded 4.41 births per woman in 2000 and 5.85 in 2024–25, a 1.44-birth increased (32.5%). The national TFR fell from 5.52 to 4.05 (–26.7%). In 2000, Afar was 1.11 births below the national rate; by 2024–25, it was 1.80 births above the national rate.

The largest observed interval change occurred in 2011–2016 (+0.55 births per woman). Intervals with increases of more than 0.05 births per woman were 2000–2005, 2011–2016, 2016–2024/25. The 2024–25 gap from the national estimate is +1.80 births per woman (regional minus national). These descriptive contrasts should not be interpreted as statistically significant without evaluating the reported survey uncertainty and covariance.

4.5.3 Amhara

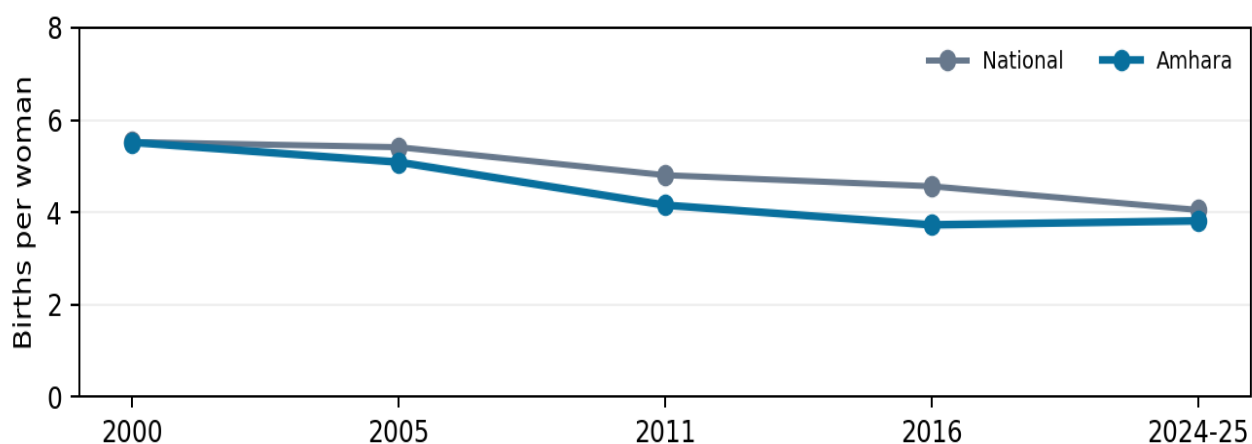


Figure 4.5.3. Amhara and national total fertility rates, five EDHS rounds, 2000–2024/25.
Source: certified 03_OBSERVED panel.

Amhara recorded 5.51 births per woman in 2000 and 3.81 in 2024–25, a 1.70-birth declined (30.9%). The national TFR fell from 5.52 to 4.05 (–26.7%). In 2000, Amhara was 0.01 births below the national rate; by 2024–25, it was 0.24 births below the national rate.

The largest observed interval change occurred in 2005–2011 (–0.93 births per woman). Intervals with increases of more than 0.05 births per woman were 2016–2024/25. The 2024–25 gap from the national estimate is –0.24 births per woman (regional minus national). These descriptive contrasts should not be interpreted as statistically significant without evaluating the reported survey uncertainty and covariance.

4.5.4 Oromia

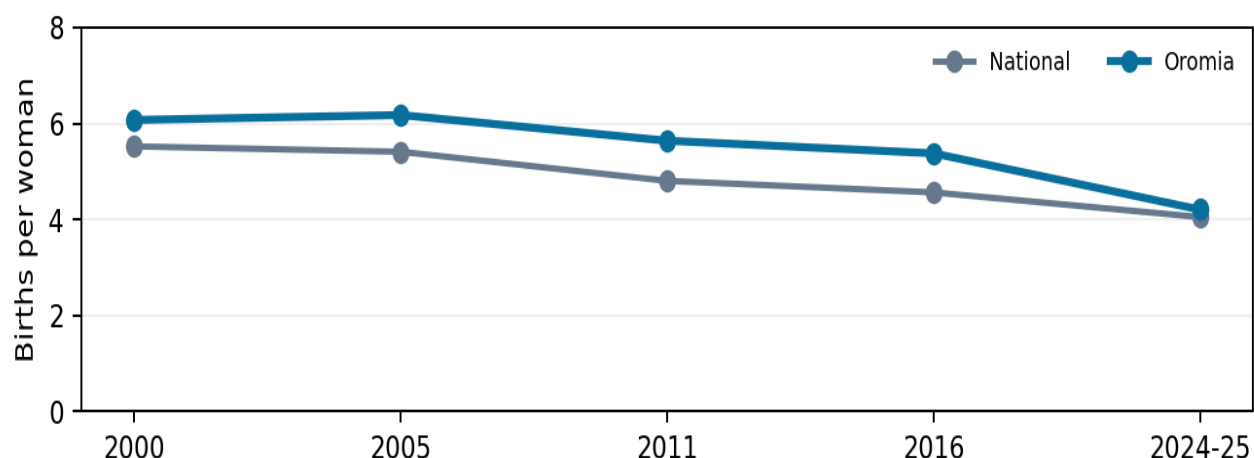


Figure 4.5.4. Oromia and national total fertility rates, five EDHS rounds, 2000–2024/25.
Source: certified 03_OBSERVED panel.

Oromia recorded 6.07 births per woman in 2000 and 4.20 in 2024–25, a 1.87-birth declined (30.8%). The national TFR fell from 5.52 to 4.05 (–26.7%). In 2000, Oromia was 0.55 births above the national rate; by 2024–25, it was 0.16 births above the national rate.

The largest observed interval change occurred in 2016–2024/25 (–1.17 births per woman). Intervals with increases of more than 0.05 births per woman were 2000–2005. The 2024–25 gap from the national estimate is +0.16 births per woman (regional minus national). These descriptive contrasts should not be interpreted as statistically significant without evaluating the reported survey uncertainty and covariance.

4.5.5 Somali

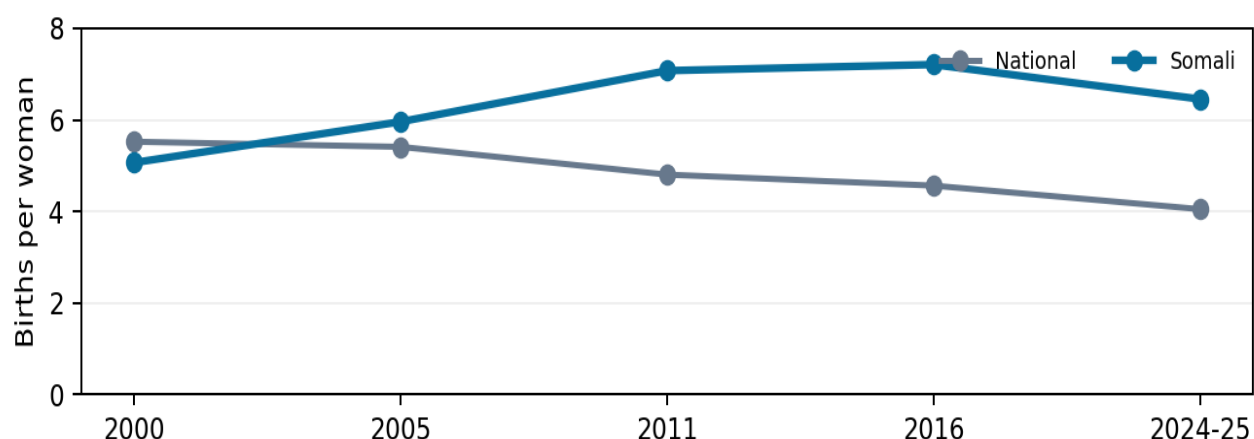


Figure 4.5.5. Somali and national total fertility rates, five EDHS rounds, 2000–2024/25. Source: certified 03_OBSERVED panel.

Somali recorded 5.07 births per woman in 2000 and 6.45 in 2024–25, a 1.39-birth increase (27.4%). The national TFR fell from 5.52 to 4.05 (–26.7%). In 2000, Somali was 0.46 births below the national rate; by 2024–25, it was 2.40 births above the national rate.

The largest observed interval change occurred in 2005–2011 (+1.12 births per woman). Intervals with increases of more than 0.05 births per woman were 2000–2005, 2005–2011, 2011–2016. The 2024–25 gap from the national estimate is +2.40 births per woman (regional minus national). These descriptive contrasts should not be interpreted as statistically significant without evaluating the reported survey uncertainty and covariance.

4.5.6 Benishangul-Gumuz

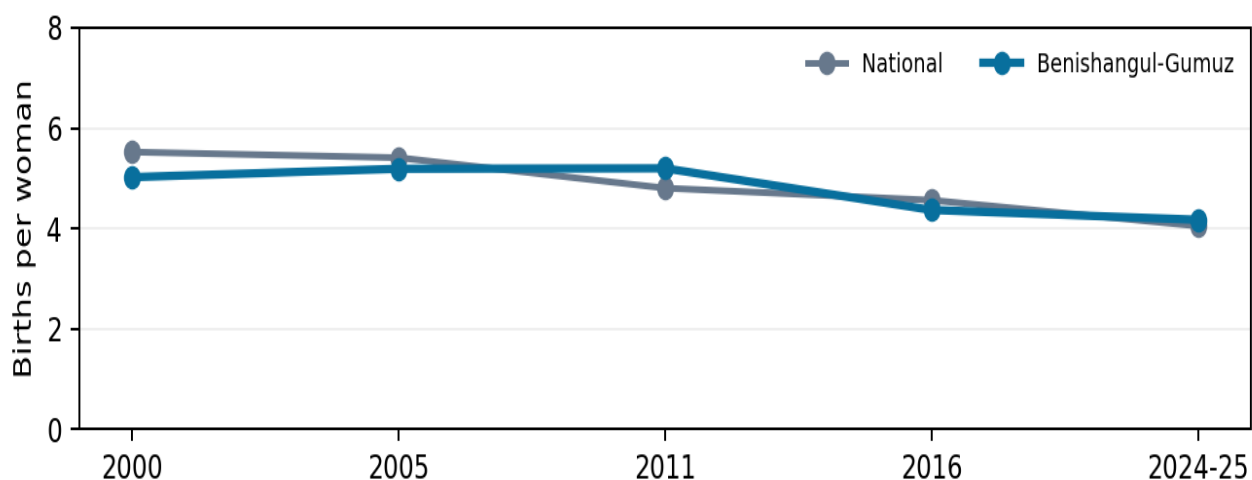


Figure 4.5.6. Benishangul-Gumuz and national total fertility rates, five EDHS rounds, 2000–2024/25. Source: certified 03_OBSERVED panel.

Benishangul-Gumuz recorded 5.02 births per woman in 2000 and 4.17 in 2024–25, a 0.85-birth decline (16.9%). The national TFR fell from 5.52 to 4.05 (–26.7%). In 2000, Benishangul-Gumuz was 0.50 births below the national rate; by 2024–25, it was 0.12 births above the national rate.

The largest observed interval change occurred in 2011–2016 (–0.83 births per woman). Intervals with increases of more than 0.05 births per woman were 2000–2005. The 2024–25 gap from the national estimate is +0.12 births per woman (regional minus national). These descriptive contrasts should not be interpreted as statistically significant without evaluating the reported survey uncertainty and covariance.

4.5.7 Central Ethiopia

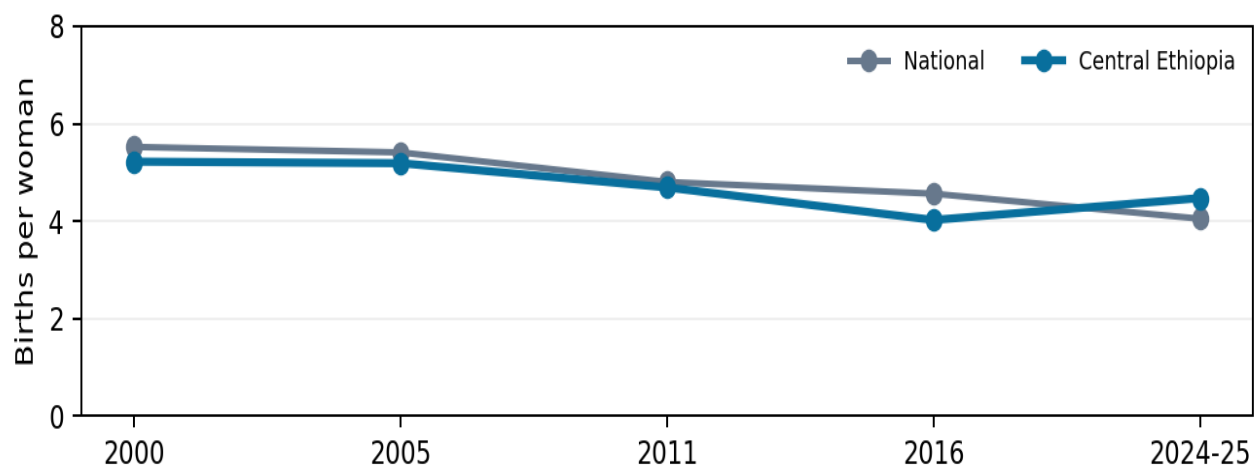


Figure 4.5.7. Central Ethiopia and national total fertility rates, five EDHS rounds, 2000–2024/25. Source: certified 03_OBSEVED panel.

Central Ethiopia recorded 5.22 births per woman in 2000 and 4.47 in 2024–25, a 0.75-birth declined (14.4%). The national TFR fell from 5.52 to 4.05 (–26.7%). In 2000, Central Ethiopia was 0.30 births below the national rate; by 2024–25, it was 0.42 births above the national rate.

The largest observed interval change occurred in 2011–2016 (–0.67 births per woman). Intervals with increases of more than 0.05 births per woman were 2016–2024/25. The 2024–25 gap from the national estimate is +0.42 births per woman (regional minus national). These descriptive contrasts should not be interpreted as statistically significant without evaluating the reported survey uncertainty and covariance.

4.5.8 Sidama

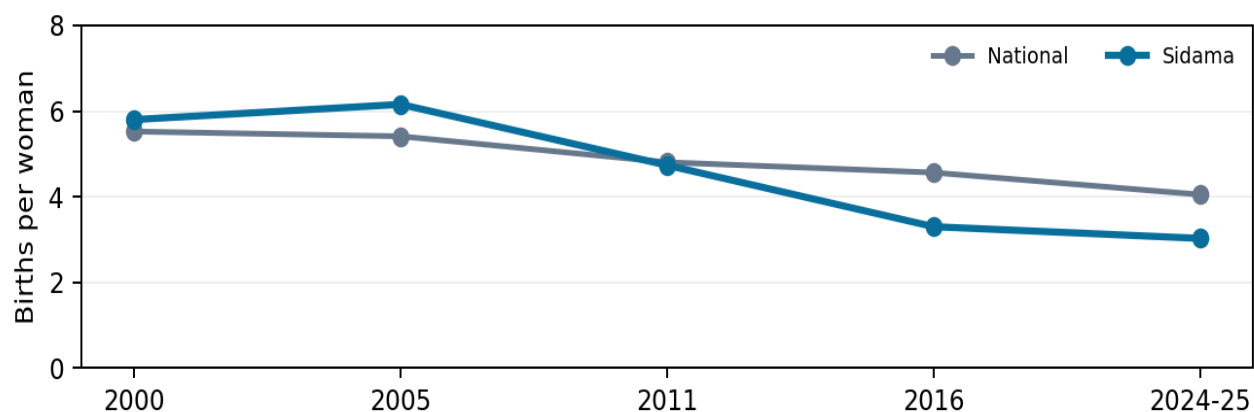


Figure 4.5.8. Sidama and national total fertility rates, five EDHS rounds, 2000–2024/25. Source: certified 03_OBSEVED panel.

Sidama recorded 5.80 births per woman in 2000 and 3.03 in 2024–25, a 2.77-birth declined (47.8%). The national TFR fell from 5.52 to 4.05 (–26.7%). In 2000, Sidama was 0.28 births above the national rate; by 2024–25, it was 1.02 births below the national rate.

The largest observed interval change occurred in 2011–2016 (–1.43 births per woman). Intervals with increases of more than 0.05 births per woman were 2000–2005. The 2024–25 gap from the national estimate is –1.02 births per woman (regional minus national). These descriptive contrasts should not be interpreted as statistically significant without evaluating the reported survey uncertainty and covariance.

4.5.9 South Ethiopia

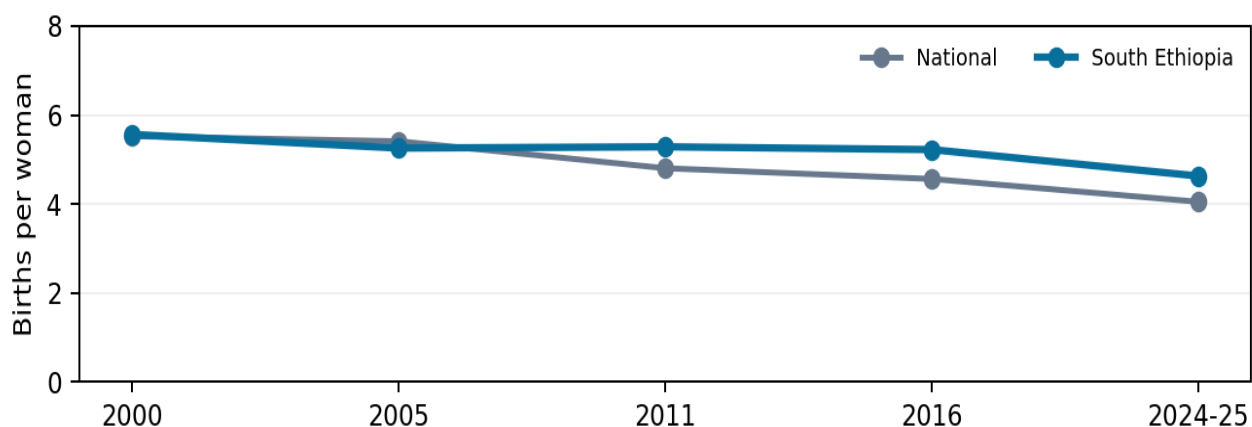


Figure 4.5.9. South Ethiopia and national total fertility rates, five EDHS rounds, 2000–2024/25.
Source: certified 03_OBSERVED panel.

South Ethiopia recorded 5.56 births per woman in 2000 and 4.63 in 2024–25, a 0.93-birth declined (16.8%). The national TFR fell from 5.52 to 4.05 (–26.7%). In 2000, South Ethiopia was 0.04 births above the national rate; by 2024–25, it was 0.58 births above the national rate.

The largest observed interval change occurred in 2016–2024/25 (–0.59 births per woman). No interval shows an increase exceeding 0.05 births per woman. The 2024–25 gap from the national estimate is +0.58 births per woman (regional minus national). These descriptive contrasts should not be interpreted as statistically significant without evaluating the reported survey uncertainty and covariance.

4.5.10 South West Ethiopia

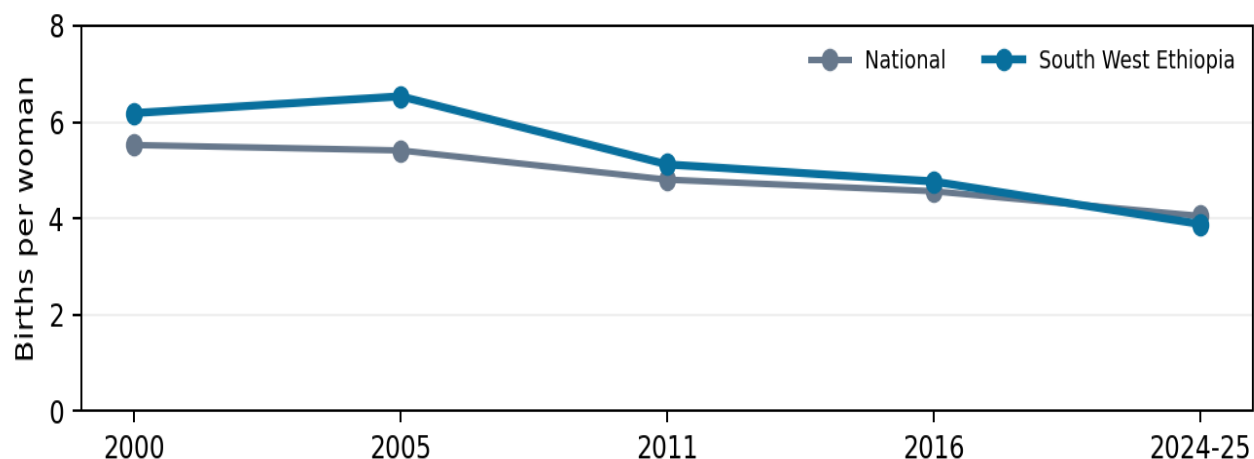


Figure 4.5.10. South West Ethiopia and national total fertility rates, five EDHS rounds, 2000–2024/25.
Source: certified 03_OBSERVED panel.

South West Ethiopia recorded 6.19 births per woman in 2000 and 3.88 in 2024–25, a 2.30-birth decline (37.3%). The national TFR fell from 5.52 to 4.05 (–26.7%). In 2000, South West Ethiopia was 0.66 births above the national rate; by 2024–25, it was 0.17 births below the national rate.

The largest observed interval change occurred in 2005–2011 (–1.41 births per woman). Intervals with increases of more than 0.05 births per woman were 2000–2005. The 2024–25 gap from the national estimate is –0.17 births per woman (regional minus national). These descriptive contrasts should not be interpreted as statistically significant without evaluating the reported survey uncertainty and covariance.

4.5.11 Gambella

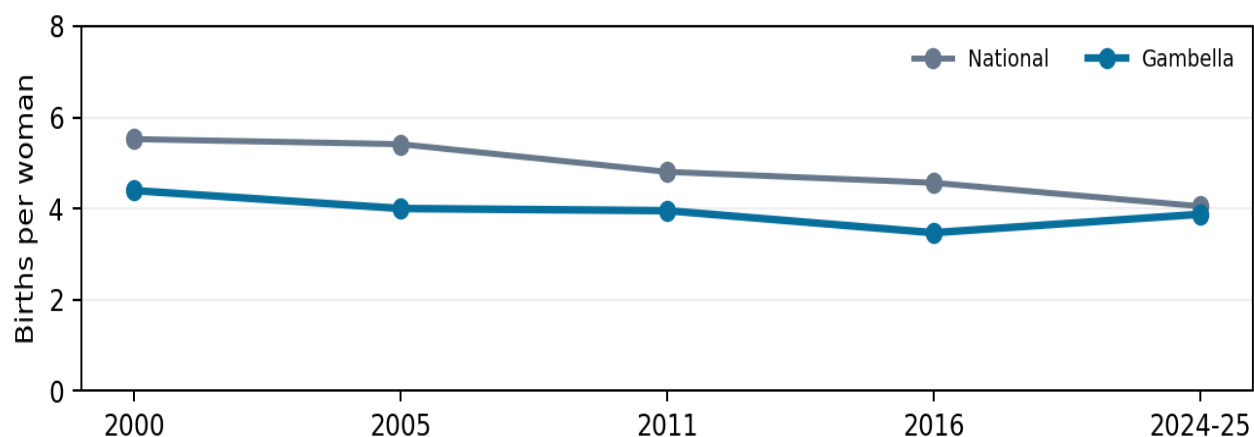


Figure 4.5.11. Gambella and national total fertility rates, five EDHS rounds, 2000–2024/25.
Source: certified 03_OBSERVED panel.

Gambella recorded 4.39 births per woman in 2000 and 3.87 in 2024–25, a 0.52-birth declined (11.8%). The national TFR fell from 5.52 to 4.05 (–26.7%). In 2000, Gambella was 1.13 births below the national rate; by 2024–25, it was 0.18 births below the national rate.

The largest observed interval change occurred in 2011–2016 (–0.48 births per woman). Intervals with increases of more than 0.05 births per woman were 2016–2024/25. The 2024–25 gap from the national estimate is –0.18 births per woman (regional minus national). These descriptive contrasts should not be interpreted as statistically significant without evaluating the reported survey uncertainty and covariance.

4.5.12 Harari

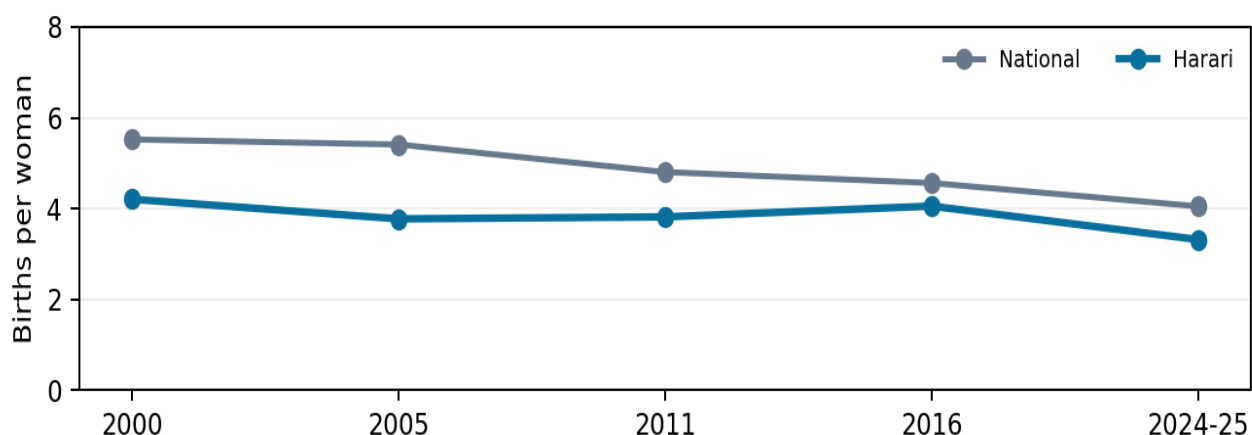


Figure 4.5.12. Harari and national total fertility rates, five EDHS rounds, 2000–2024/25.
Source: certified 03_OBSERVED panel.

Harari recorded 4.20 births per woman in 2000 and 3.32 in 2024–25, a 0.89-birth declined (21.1%). The national TFR fell from 5.52 to 4.05 (–26.7%). In 2000, Harari was 1.32 births below the national rate; by 2024–25, it was 0.73 births below the national rate.

The largest observed interval change occurred in 2016–2024/25 (–0.74 births per woman). Intervals with increases of more than 0.05 births per woman were 2011–2016. The 2024–25 gap from the national estimate is –0.73 births per woman (regional minus national). These descriptive contrasts should not be interpreted as statistically significant without evaluating the reported survey uncertainty and covariance.

4.5.13 Addis Ababa

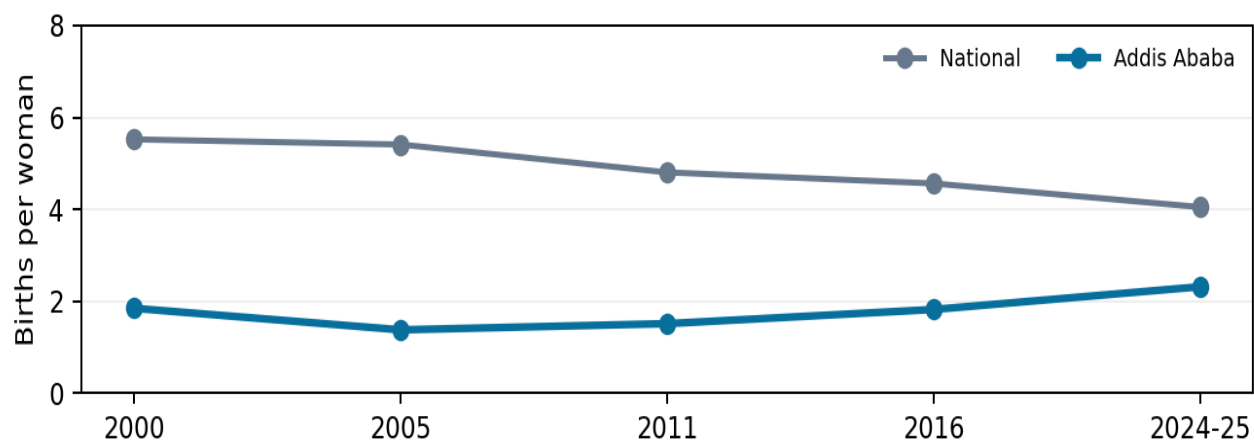


Figure 4.5.13. Addis Ababa and national total fertility rates, five EDHS rounds, 2000–2024/25.
Source: certified 03_OBSERVED panel.

Addis Ababa recorded 1.84 births per woman in 2000 and 2.31 in 2024–25, a 0.47-birth increase (25.4%). The national TFR fell from 5.52 to 4.05 (–26.7%). In 2000, Addis Ababa was 3.68 births below the national rate; by 2024–25, it was 1.73 births below the national rate.

The largest observed interval change occurred in 2016–2024/25 (+0.49 births per woman). Intervals with increases of more than 0.05 births per woman were 2005–2011, 2011–2016, 2016–2024/25. The 2024–25 gap from the national estimate is -1.73 births per woman (regional minus national). These descriptive contrasts should not be interpreted as statistically significant without evaluating the reported survey uncertainty and covariance.

4.5.14 Dire Dawa

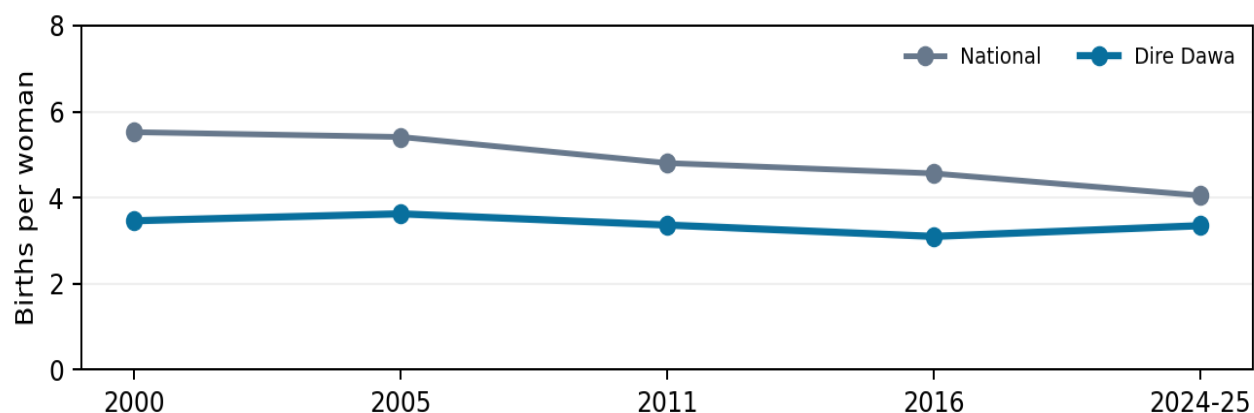


Figure 4.5.14. Dire Dawa and national total fertility rates, five EDHS rounds, 2000–2024/25.
Source: certified 03_OBSERVED panel.

Dire Dawa recorded 3.46 births per woman in 2000 and 3.35 in 2024–25, a 0.12-birth declined (3.3%). The national TFR fell from 5.52 to 4.05 (–26.7%). In 2000, Dire Dawa was 2.06 births below the national rate; by 2024–25, it was 0.70 births below the national rate.

The largest observed interval change occurred in 2011–2016 (–0.26 births per woman). Intervals with increases of more than 0.05 births per woman were 2000–2005, 2016–2024/25. The 2024–25 gap from the national estimate is –0.70 births per woman (regional minus national). These descriptive contrasts should not be interpreted as statistically significant without evaluating the reported survey uncertainty and covariance.

Cross-regional synthesis

Regional transitions were markedly heterogeneous. The largest absolute decreases occurred in Sidama, South West Ethiopia, Oromia. Regions ending above the national TFR in 2024–25 were Tigray, Afar, Oromia, Somali, Benishangul-Gumuz, Central Ethiopia, South Ethiopia. Regions showing net increases over the quarter-century were Afar, Somali, Addis Ababa. These comparisons describe historical patterns, not causal explanations.

Methods and interpretation safeguards

The source workbook identifies each historical point as certified, with jackknife uncertainty and source evidence. Period TFR was reconstructed from seven five-year age-specific fertility rates using the 1–36 months preceding interview. Harmonized successor-region results should not be mistaken for official region-specific tabulations in earlier survey publications. National and regional estimates have overlapping samples, so the precision of their difference cannot be inferred by simply comparing marginal confidence intervals. The panels use a common vertical scale (0–8 births per woman) to avoid exaggerating differences. No values from illustrative figures in the 2025 website chapter were reused.

Age-Specific Fertility Schedules and Their Quarter-Century Transformation, 2000–2024/25

Purpose and scope

This supplement examines age-specific fertility rates (ASFR) in the 11 historical regional geographies represented in the Chapter 1 source tables, comparing 2000 with 2024–25. The analysis follows five geographic panels (A–E), with historical SNNPR in Panel E. Each regional schedule is discussed against a national reference constructed from the supplied weighted birth and exposure totals. No intermediate survey years or projections are inferred.

Data, definitions, and safeguards

ASFR is the weighted number of births to women in a specified five-year age group divided by weighted woman-years of exposure in that group, multiplied by 1,000. Seven age groups are analyzed: 15–19 through 45–49. Summing the seven rates and multiplying by five and dividing by 1,000 gives the TFR implied by the age-specific schedule. The implied TFR is a consistency summary of this ASFR dataset; it is not automatically interchangeable with the separately certified regional TFR panel used earlier in Chapter 4.

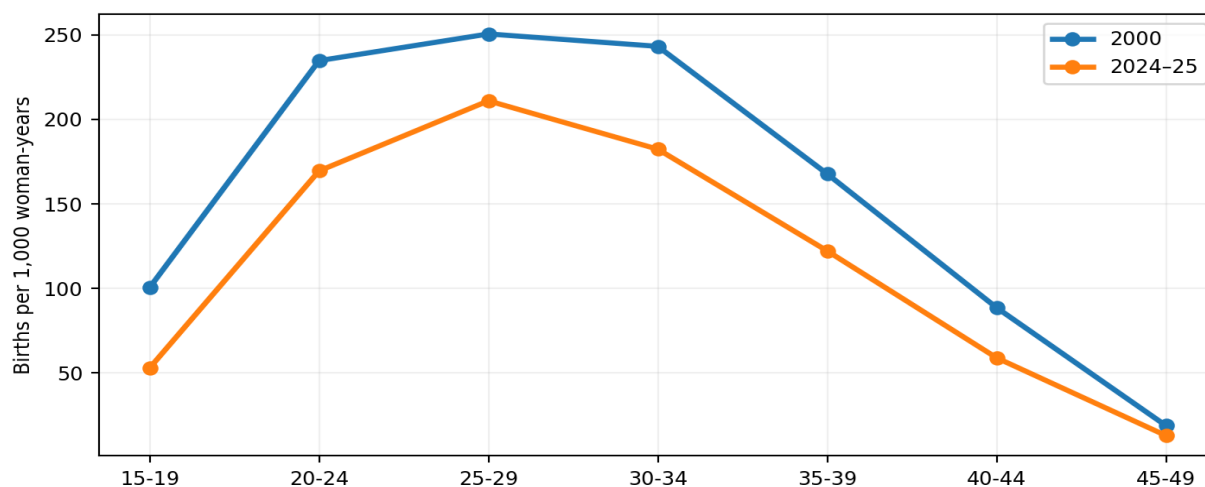
The national reference was derived as $1,000 \times (\text{sum of the 11 regional weighted births}) / (\text{sum of the corresponding regional weighted woman-years})$, separately for each age group and survey endpoint. This is valid as a national reconstruction only if the historical regional files form a complete, mutually exclusive national partition with consistent weighting and exposure definitions. That coverage assumption cannot be independently certified from these aggregate files alone; the reference is therefore consistently labeled “National (derived)” rather than “official national EDHS ASFR.”

Historical SNNPR is retained as a single analytical unit because the ASFR source uses the historical geography. It is not equivalent to Sidama, Central Ethiopia, South Ethiopia, or South West Ethiopia individually. The source files do not provide a boundary crosswalk or microdata-based proof that the 2024–25 SNNPR observation is perfectly reconstructed on its 2000 boundaries. Long-run changes in Panel E must therefore be read conditionally, pending confirmation of that harmonization.

National fertility schedule: derived reference

The weighted national aggregate yields an ASFR-implied TFR of 5.52 births per woman in 2000 and 4.05 in 2024–25, a change of -1.47 (-26.7%). These are derived summaries of the uploaded ASFR records, not replacements for the independently certified national TFR estimates of 5.52 and 4.05 reported in Part I. The age of peak fertility moves from 25–29 in 2000 to 25–29 in 2024–25. Adolescent fertility changes from 100.5 to 52.9 births per 1,000 woman-years. The share of schedule-implied TFR contributed by ages 15–29 changes from 53.1% to 53.5%.

This age decomposition distinguishes the intensity of childbearing from its timing. A reduction in fertility at ages 15–19 can coexist with stability or increases in the late twenties and thirties; accordingly, a declining total does not imply that all ages contributed equally. The national reference should be interpreted as the exposure-weighted average of the source geographies, not as the arithmetic mean of regional rates.



Regional comparative profiles

A. Northern and Central

A. Northern and Central

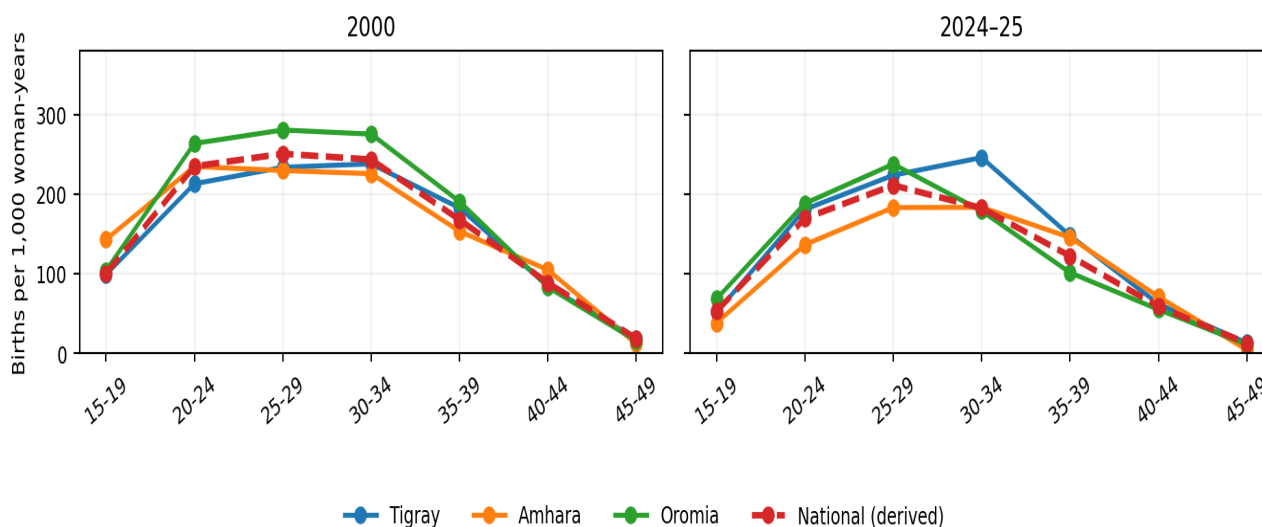


Figure 1. Age-specific fertility schedules in Northern and Central, 2000 and 2024–25. Dashed line: national aggregate derived from regional weighted births and exposure. Each panel has the same vertical scale. Source: uploaded Chapter 1 ASFR change and reconstructed 2024–25 tables; author calculations.

Tigray

Overall schedule and transition. The seven age-specific rates imply a TFR of 5.34 births per woman in 2000 and 4.62 in 2024–25, a net change of -0.72 births (-13.5%). The largest absolute age-specific movement occurs at ages 15-19: 99.1 to 51.6 births per 1,000 woman-years (-47.5). The peak of the

schedule is at ages 30–34 in 2000 and 30–34 in 2024–25. These measures describe the regional age schedule rather than a projected fertility path.

Early childbearing and reproductive timing. Fertility at ages 15–19 changes from 99.1 to 51.6 per 1,000 woman-years (-47.5; -47.9%). At ages 20–24, the corresponding rates are 212.9 and 180.8 (-32.1); at ages 25–29 they are 233.6 and 223.6 (-10.0). The combined share of the implied TFR attributable to ages 15–29 changes from 51.0% to 49.3%. A change in this share reflects redistribution across ages as well as changes in absolute fertility, and must not be read as direct evidence of postponement for individual women.

Later reproductive ages. At ages 30–34, ASFR changes from 237.9 to 245.8 (+7.9); at 35–39, from 182.6 to 147.8 (-34.8); and at 40–44, from 84.1 to 62.1 (-22.0). At ages 45–49, the rates are 18.7 and 13.2. These age bands are important because aggregate TFR can conceal continued childbearing at older ages even when adolescent fertility declines. The numerical pattern should not be interpreted causally without information on marriage, contraception, parity, and other determinants.

Comparison with the national reference. In 2000, the region's ASFR exceeded the derived national rate in 1 of seven age groups; in 2024–25, it exceeded the reference in 6. At the regional peak age in 2024–25 (30–34), its rate was 245.8, compared with 182.4 nationally (difference +63.4 per 1,000). Its schedule-implied TFR was +0.58 births above or below the national-derived total in 2024–25. These comparisons identify the ages that contribute to regional divergence, without assuming that a national average represents the experience of every population subgroup.

Amhara

Overall schedule and transition. The seven age-specific rates imply a TFR of 5.51 births per woman in 2000 and 3.81 in 2024–25, a net change of -1.70 births (-30.9%). The largest absolute age-specific movement occurs at ages 15–19: 143.0 to 38.3 births per 1,000 woman-years (-104.7). The peak of the schedule is at ages 20–24 in 2000 and 30–34 in 2024–25. These measures describe the regional age schedule rather than a projected fertility path.

Early childbearing and reproductive timing. Fertility at ages 15–19 changes from 143.0 to 38.3 per 1,000 woman-years (-104.7; -73.2%). At ages 20–24, the corresponding rates are 234.6 and 136.5 (-98.1); at ages 25–29 they are 229.5 and 183.1 (-46.4). The combined share of the implied TFR attributable to ages 15–29 changes from 55.1% to 46.9%. A change in this share reflects redistribution across ages as well as changes in absolute fertility, and must not be read as direct evidence of postponement for individual women.

Later reproductive ages. At ages 30–34, ASFR changes from 225.6 to 183.3 (-42.3); at 35–39, from 153.3 to 145.5 (-7.8); and at 40–44, from 104.8 to 71.1 (-33.7). At ages 45–49, the rates are 11.9 and 4.6. These age bands are important because aggregate TFR can conceal continued childbearing at older ages even when adolescent fertility declines. The numerical pattern should not be interpreted causally without information on marriage, contraception, parity, and other determinants.

Comparison with the national reference. In 2000, the region's ASFR exceeded the derived national rate in 2 of seven age groups; in 2024–25, it exceeded the reference in 3. At the regional peak age in 2024–25 (30–34), its rate was 183.3, compared with 182.4 nationally (difference +0.9 per 1,000). Its schedule-implied TFR was -0.24 births above or below the national-derived total in 2024–25. These

comparisons identify the ages that contribute to regional divergence, without assuming that a national average represents the experience of every population subgroup.

Oromia

Overall schedule and transition. The seven age-specific rates imply a TFR of 6.07 births per woman in 2000 and 4.20 in 2024–25, a net change of -1.86 births (-30.7%). The largest absolute age-specific movement occurs at ages 30–34: 275.2 to 178.8 births per 1,000 woman-years (-96.4). The peak of the schedule is at ages 25–29 in 2000 and 25–29 in 2024–25. These measures describe the regional age schedule rather than a projected fertility path.

Early childbearing and reproductive timing. Fertility at ages 15–19 changes from 104.2 to 68.4 per 1,000 woman-years (-35.8; -34.4%). At ages 20–24, the corresponding rates are 263.5 and 188.2 (-75.3); at ages 25–29 they are 280.4 and 237.6 (-42.8). The combined share of the implied TFR attributable to ages 15–29 changes from 53.4% to 58.8%. A change in this share reflects redistribution across ages as well as changes in absolute fertility, and must not be read as direct evidence of postponement for individual women.

Later reproductive ages. At ages 30–34, ASFR changes from 275.2 to 178.8 (-96.4); at 35–39, from 190.6 to 101.4 (-89.2); and at 40–44, from 83.2 to 55.2 (-28.0). At ages 45–49, the rates are 15.9 and 11.3. These age bands are important because aggregate TFR can conceal continued childbearing at older ages even when adolescent fertility declines. The numerical pattern should not be interpreted causally without information on marriage, contraception, parity, and other determinants.

Comparison with the national reference. In 2000, the region's ASFR exceeded the derived national rate in 5 of seven age groups; in 2024–25, it exceeded the reference in 3. At the regional peak age in 2024–25 (25–29), its rate was 237.6, compared with 211.0 nationally (difference +26.6 per 1,000). Its schedule-implied TFR was +0.16 births above or below the national-derived total in 2024–25. These comparisons identify the ages that contribute to regional divergence, without assuming that a national average represents the experience of every population subgroup.

B. Eastern

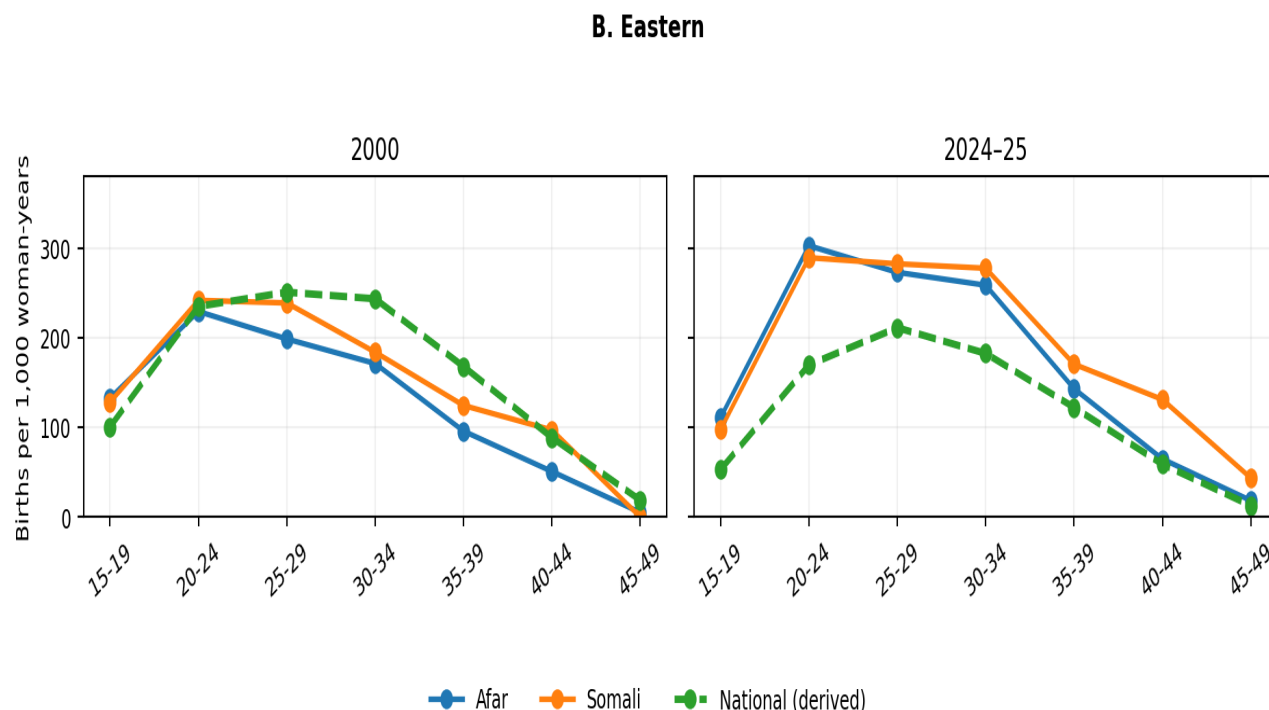


Figure 2. Age-specific fertility schedules in Eastern, 2000 and 2024–25. Dashed line: national aggregate derived from regional weighted births and exposure. Each panel has the same vertical scale. Source: uploaded Chapter 1 ASFR change and reconstructed 2024–25 tables; author calculations.

Afar

Overall schedule and transition. The seven age-specific rates imply a TFR of 4.42 births per woman in 2000 and 5.85 in 2024–25, a net change of +1.44 births (+32.5%). The largest absolute age-specific movement occurs at ages 30–34: 171.1 to 258.4 births per 1,000 woman-years (+87.3). The peak of the schedule is at ages 20–24 in 2000 and 20–24 in 2024–25. These measures describe the regional age schedule rather than a projected fertility path.

Early childbearing and reproductive timing. Fertility at ages 15–19 changes from 132.6 to 110.6 per 1,000 woman-years (–22.0; –16.6%). At ages 20–24, the corresponding rates are 229.1 and 302.4 (+73.3); at ages 25–29 they are 198.5 and 272.7 (+74.2). The combined share of the implied TFR attributable to ages 15–29 changes from 63.4% to 58.6%. A change in this share reflects redistribution across ages as well as changes in absolute fertility, and must not be read as direct evidence of postponement for individual women.

Later reproductive ages. At ages 30–34, ASFR changes from 171.1 to 258.4 (+87.3); at 35–39, from 95.8 to 143.1 (+47.3); and at 40–44, from 50.8 to 64.7 (+13.9). At ages 45–49, the rates are 5.1 and 18.4. These age bands are important because aggregate TFR can conceal continued childbearing at older ages even when adolescent fertility declines. The numerical pattern should not be interpreted causally without information on marriage, contraception, parity, and other determinants.

Comparison with the national reference. In 2000, the region's ASFR exceeded the derived national rate in 1 of seven age groups; in 2024–25, it exceeded the reference in 7. At the regional peak age in 2024–25 (20–24), its rate was 302.4, compared with 169.5 nationally (difference +132.9 per 1,000). Its schedule-implied TFR was +1.80 births above or below the national-derived total in 2024–25. These comparisons identify the ages that contribute to regional divergence, without assuming that a national average represents the experience of every population subgroup.

Somali

Overall schedule and transition. The seven age-specific rates imply a TFR of 5.07 births per woman in 2000 and 6.45 in 2024–25, a net change of +1.39 births (+27.4%). The largest absolute age-specific movement occurs at ages 30–34: 183.7 to 277.3 births per 1,000 woman-years (+93.6). The peak of the schedule is at ages 20–24 in 2000 and 20–24 in 2024–25. These measures describe the regional age schedule rather than a projected fertility path.

Early childbearing and reproductive timing. Fertility at ages 15–19 changes from 128.0 to 97.3 per 1,000 woman-years (-30.7; -24.0%). At ages 20–24, the corresponding rates are 241.5 and 289.0 (+47.5); at ages 25–29 they are 238.6 and 282.2 (+43.6). The combined share of the implied TFR attributable to ages 15–29 changes from 60.0% to 51.8%. A change in this share reflects redistribution across ages as well as changes in absolute fertility, and must not be read as direct evidence of postponement for individual women.

Later reproductive ages. At ages 30–34, ASFR changes from 183.7 to 277.3 (+93.6); at 35–39, from 124.4 to 170.4 (+46.0); and at 40–44, from 97.0 to 131.0 (+34.0). At ages 45–49, the rates are 0.0 and 43.6. These age bands are important because aggregate TFR can conceal continued childbearing at older ages even when adolescent fertility declines. The numerical pattern should not be interpreted causally without information on marriage, contraception, parity, and other determinants.

Comparison with the national reference. In 2000, the region's ASFR exceeded the derived national rate in 3 of seven age groups; in 2024–25, it exceeded the reference in 7. At the regional peak age in 2024–25 (20–24), its rate was 289.0, compared with 169.5 nationally (difference +119.5 per 1,000). Its schedule-implied TFR was +2.41 births above or below the national-derived total in 2024–25. These comparisons identify the ages that contribute to regional divergence, without assuming that a national average represents the experience of every population subgroup.

C. Urban / Primarily Urban

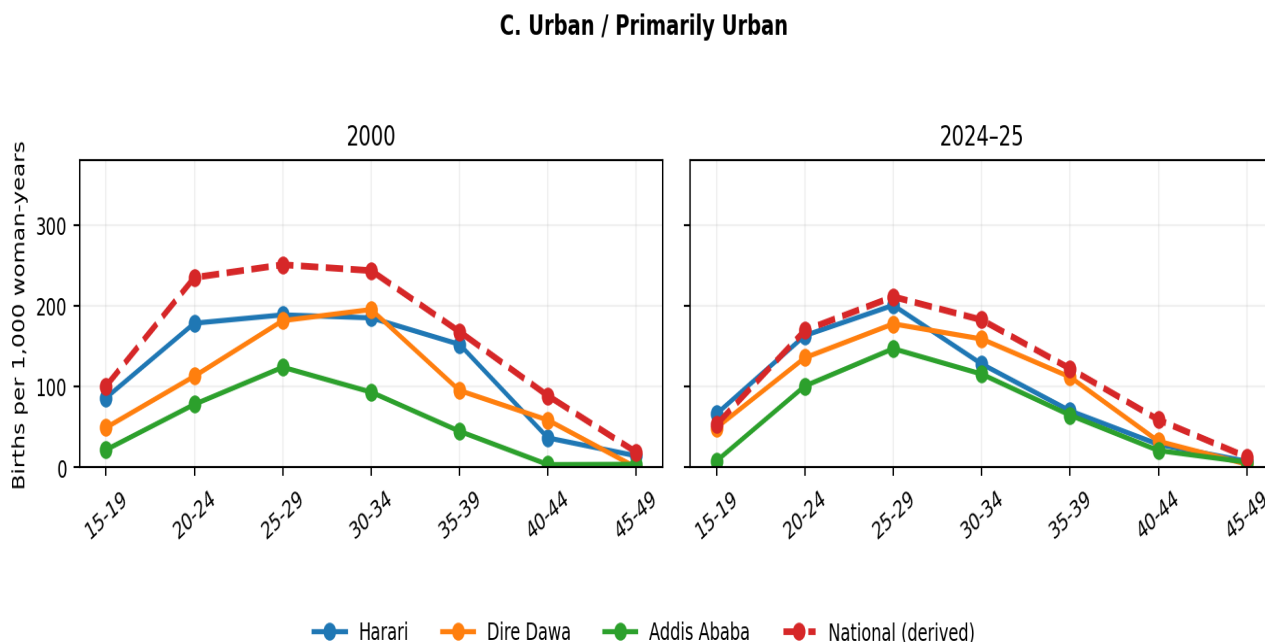


Figure 3. Age-specific fertility schedules in Urban / Primarily Urban, 2000 and 2024–25. Dashed line: national aggregate derived from regional weighted births and exposure. Each panel has the same vertical scale. Source: uploaded Chapter 1 ASFR change and reconstructed 2024–25 tables; author calculations.

Harari

Overall schedule and transition. The seven age-specific rates imply a TFR of 4.20 births per woman in 2000 and 3.32 in 2024–25, a net change of -0.89 births (-21.1%). The largest absolute age-specific movement occurs at ages 35–39: 152.1 to 70.0 births per 1,000 woman-years (-82.1). The peak of the schedule is at ages 25–29 in 2000 and 25–29 in 2024–25. These measures describe the regional age schedule rather than a projected fertility path.

Early childbearing and reproductive timing. Fertility at ages 15–19 changes from 86.1 to 66.2 per 1,000 woman-years (-19.9; -23.1%). At ages 20–24, the corresponding rates are 178.3 and 163.0 (-15.3); at ages 25–29 they are 188.6 and 200.5 (+11.9). The combined share of the implied TFR attributable to ages 15–29 changes from 53.9% to 64.7%. A change in this share reflects redistribution across ages as well as changes in absolute fertility, and must not be read as direct evidence of postponement for individual women.

Later reproductive ages. At ages 30–34, ASFR changes from 184.9 to 127.9 (-57.0); at 35–39, from 152.1 to 70.0 (-82.1); and at 40–44, from 36.5 to 28.5 (-8.0). At ages 45–49, the rates are 14.3 and 7.6. These age bands are important because aggregate TFR can conceal continued childbearing at older ages even when adolescent fertility declines. The numerical pattern should not be interpreted causally without information on marriage, contraception, parity, and other determinants.

Comparison with the national reference. In 2000, the region's ASFR exceeded the derived national rate in 0 of seven age groups; in 2024–25, it exceeded the reference in 1. At the regional peak age in 2024–25 (25–29), its rate was 200.5, compared with 211.0 nationally (difference -10.5 per 1,000). Its

schedule-implied TFR was -0.73 births above or below the national-derived total in 2024–25. These comparisons identify the ages that contribute to regional divergence, without assuming that a national average represents the experience of every population subgroup.

Dire Dawa

Overall schedule and transition. The seven age-specific rates imply a TFR of 3.46 births per woman in 2000 and 3.35 in 2024–25, a net change of -0.12 births (-3.3%). The largest absolute age-specific movement occurs at ages 30–34: 195.2 to 158.8 births per 1,000 woman-years (-36.4). The peak of the schedule is at ages 30–34 in 2000 and 25–29 in 2024–25. These measures describe the regional age schedule rather than a projected fertility path.

Early childbearing and reproductive timing. Fertility at ages 15–19 changes from 49.2 to 49.1 per 1,000 woman-years (-0.1; -0.2%). At ages 20–24, the corresponding rates are 112.8 and 135.6 (+22.8); at ages 25–29 they are 181.5 and 177.5 (-4.0). The combined share of the implied TFR attributable to ages 15–29 changes from 49.6% to 54.1%. A change in this share reflects redistribution across ages as well as changes in absolute fertility, and must not be read as direct evidence of postponement for individual women.

Later reproductive ages. At ages 30–34, ASFR changes from 195.2 to 158.8 (-36.4); at 35–39, from 95.1 to 111.8 (+16.7); and at 40–44, from 58.5 to 32.4 (-26.1). At ages 45–49, the rates are 0.0 and 4.0. These age bands are important because aggregate TFR can conceal continued childbearing at older ages even when adolescent fertility declines. The numerical pattern should not be interpreted causally without information on marriage, contraception, parity, and other determinants.

Comparison with the national reference. In 2000, the region's ASFR exceeded the derived national rate in 0 of seven age groups; in 2024–25, it exceeded the reference in 0. At the regional peak age in 2024–25 (25–29), its rate was 177.5, compared with 211.0 nationally (difference -33.5 per 1,000). Its schedule-implied TFR was -0.70 births above or below the national-derived total in 2024–25. These comparisons identify the ages that contribute to regional divergence, without assuming that a national average represents the experience of every population subgroup.

Addis Ababa

Overall schedule and transition. The seven age-specific rates imply a TFR of 1.84 births per woman in 2000 and 2.31 in 2024–25, a net change of +0.47 births (+25.5%). The largest absolute age-specific movement occurs at ages 25–29: 123.9 to 146.8 births per 1,000 woman-years (+22.9). The peak of the schedule is at ages 25–29 in 2000 and 25–29 in 2024–25. These measures describe the regional age schedule rather than a projected fertility path.

Early childbearing and reproductive timing. Fertility at ages 15–19 changes from 21.8 to 8.0 per 1,000 woman-years (-13.8; -63.3%). At ages 20–24, the corresponding rates are 78.0 and 100.7 (+22.7); at ages 25–29 they are 123.9 and 146.8 (+22.9). The combined share of the implied TFR attributable to ages 15–29 changes from 60.6% to 55.2%. A change in this share reflects redistribution across ages as well as changes in absolute fertility, and must not be read as direct evidence of postponement for individual women.

Later reproductive ages. At ages 30–34, ASFR changes from 93.1 to 115.4 (+22.3); at 35–39, from 44.7 to 64.6 (+19.9); and at 40–44, from 3.5 to 20.9 (+17.4). At ages 45–49, the rates are 3.9 and 6.5.

These age bands are important because aggregate TFR can conceal continued childbearing at older ages even when adolescent fertility declines. The numerical pattern should not be interpreted causally without information on marriage, contraception, parity, and other determinants.

Comparison with the national reference. In 2000, the region's ASFR exceeded the derived national rate in 0 of seven age groups; in 2024–25, it exceeded the reference in 0. At the regional peak age in 2024–25 (25–29), its rate was 146.8, compared with 211.0 nationally (difference -64.2 per 1,000). Its schedule-implied TFR was -1.73 births above or below the national-derived total in 2024–25. These comparisons identify the ages that contribute to regional divergence, without assuming that a national average represents the experience of every population subgroup.

D. Western

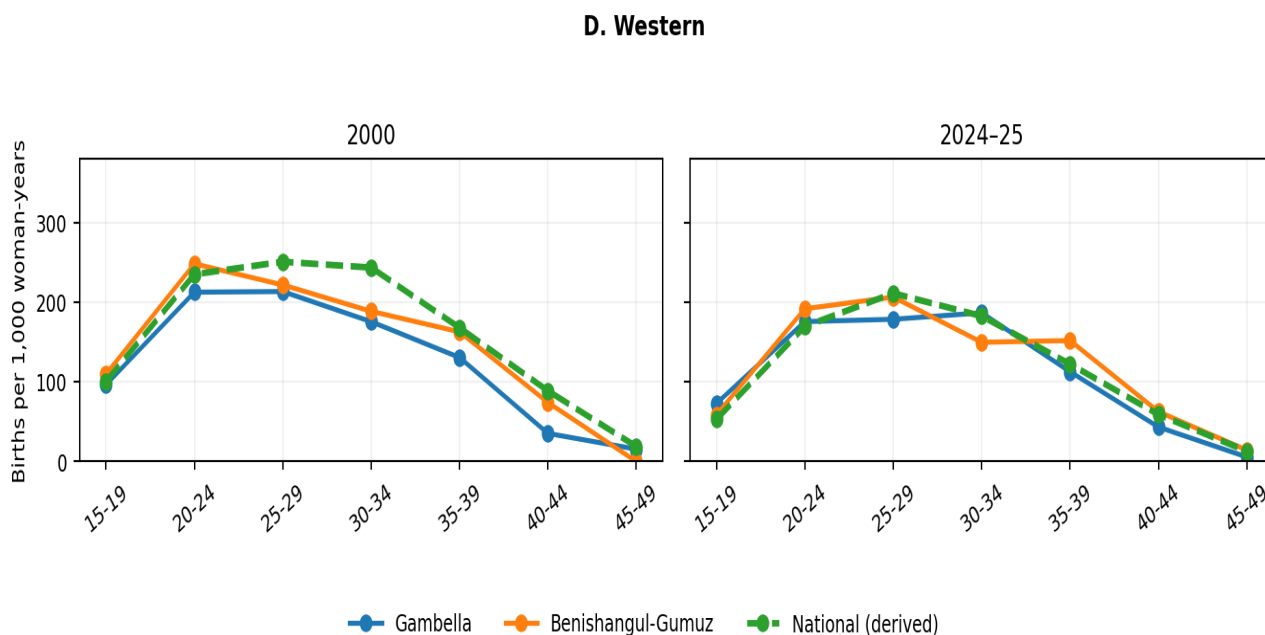


Figure 4. Age-specific fertility schedules in Western, 2000 and 2024–25. Dashed line: national aggregate derived from regional weighted births and exposure. Each panel has the same vertical scale. Source: uploaded Chapter 1 ASFR change and reconstructed 2024–25 tables; author calculations.

Gambella

Overall schedule and transition. The seven age-specific rates imply a TFR of 4.39 births per woman in 2000 and 3.87 in 2024–25, a net change of -0.52 births (-11.8%). The largest absolute age-specific movement occurs at ages 20–24: 212.4 to 175.5 births per 1,000 woman-years (-36.9). The peak of the schedule is at ages 25–29 in 2000 and 30–34 in 2024–25. These measures describe the regional age schedule rather than a projected fertility path.

Early childbearing and reproductive timing. Fertility at ages 15–19 changes from 96.4 to 72.8 per 1,000 woman-years (-23.6; -24.5%). At ages 20–24, the corresponding rates are 212.4 and 175.5 (-36.9); at ages 25–29 they are 213.2 and 178.4 (-34.8). The combined share of the implied TFR attributable to ages 15–29 changes from 59.4% to 55.1%. A change in this share reflects

redistribution across ages as well as changes in absolute fertility, and must not be read as direct evidence of postponement for individual women.

Later reproductive ages. At ages 30–34, ASFR changes from 175.4 to 186.5 (+11.1); at 35–39, from 130.4 to 112.6 (-17.8); and at 40–44, from 35.2 to 43.2 (+8.0). At ages 45–49, the rates are 15.4 and 5.6. These age bands are important because aggregate TFR can conceal continued childbearing at older ages even when adolescent fertility declines. The numerical pattern should not be interpreted causally without information on marriage, contraception, parity, and other determinants.

Comparison with the national reference. In 2000, the region's ASFR exceeded the derived national rate in 0 of seven age groups; in 2024–25, it exceeded the reference in 3. At the regional peak age in 2024–25 (30–34), its rate was 186.5, compared with 182.4 nationally (difference +4.1 per 1,000). Its schedule-implied TFR was -0.18 births above or below the national-derived total in 2024–25. These comparisons identify the ages that contribute to regional divergence, without assuming that a national average represents the experience of every population subgroup.

Benishangul-Gumuz

Overall schedule and transition. The seven age-specific rates imply a TFR of 5.02 births per woman in 2000 and 4.17 in 2024–25, a net change of -0.85 births (-16.9%). The largest absolute age-specific movement occurs at ages 20–24: 248.0 to 191.6 births per 1,000 woman-years (-56.4). The peak of the schedule is at ages 20–24 in 2000 and 25–29 in 2024–25. These measures describe the regional age schedule rather than a projected fertility path.

Early childbearing and reproductive timing. Fertility at ages 15–19 changes from 109.7 to 58.7 per 1,000 woman-years (-51.0; -46.5%). At ages 20–24, the corresponding rates are 248.0 and 191.6 (-56.4); at ages 25–29 they are 221.5 and 206.3 (-15.2). The combined share of the implied TFR attributable to ages 15–29 changes from 57.7% to 54.7%. A change in this share reflects redistribution across ages as well as changes in absolute fertility, and must not be read as direct evidence of postponement for individual women.

Later reproductive ages. At ages 30–34, ASFR changes from 188.4 to 149.5 (-38.9); at 35–39, from 162.6 to 151.7 (-10.9); and at 40–44, from 74.0 to 62.5 (-11.5). At ages 45–49, the rates are 0.0 and 14.2. These age bands are important because aggregate TFR can conceal continued childbearing at older ages even when adolescent fertility declines. The numerical pattern should not be interpreted causally without information on marriage, contraception, parity, and other determinants.

Comparison with the national reference. In 2000, the region's ASFR exceeded the derived national rate in 2 of seven age groups; in 2024–25, it exceeded the reference in 5. At the regional peak age in 2024–25 (25–29), its rate was 206.3, compared with 211.0 nationally (difference -4.7 per 1,000). Its schedule-implied TFR was +0.12 births above or below the national-derived total in 2024–25. These comparisons identify the ages that contribute to regional divergence, without assuming that a national average represents the experience of every population subgroup.

E. Historical Southern

E. Historical Southern

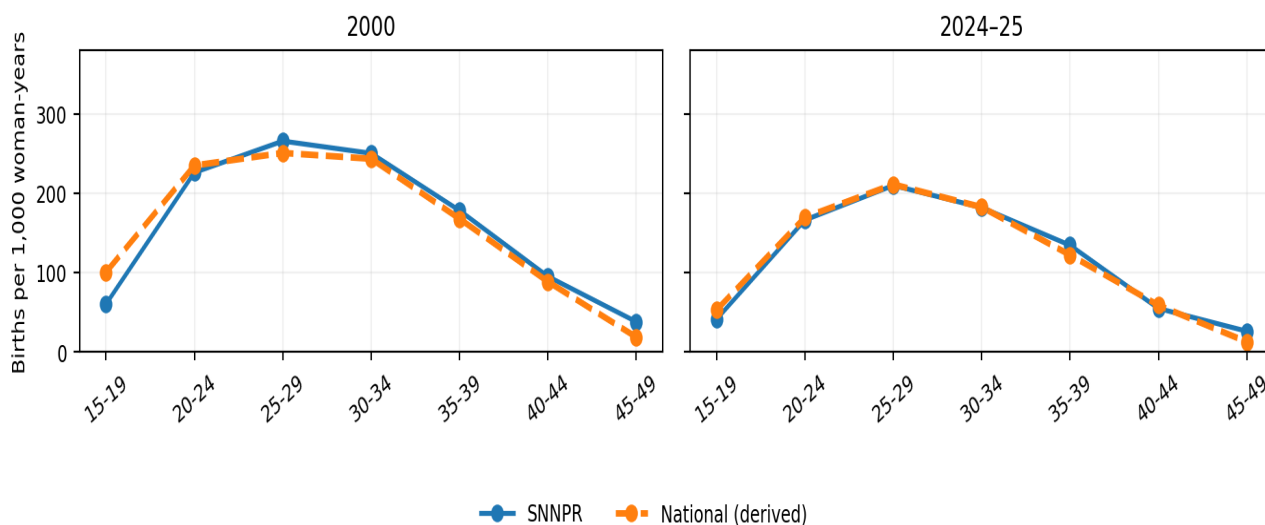


Figure 5. Age-specific fertility schedules in Historical Southern, 2000 and 2024–25. Dashed line: national aggregate derived from regional weighted births and exposure. Each panel has the same vertical scale. Source: uploaded Chapter 1 ASFR change and reconstructed 2024–25 tables; author calculations.

SNNPR

Overall schedule and transition. The seven age-specific rates imply a TFR of 5.57 births per woman in 2000 and 4.07 in 2024–25, a net change of -1.49 births (-26.8%). The largest absolute age-specific movement occurs at ages 30–34: 250.1 to 181.8 births per 1,000 woman-years (-68.3). The peak of the schedule is at ages 25–29 in 2000 and 25–29 in 2024–25. These measures describe the regional age schedule rather than a projected fertility path.

Early childbearing and reproductive timing. Fertility at ages 15–19 changes from 60.3 to 41.3 per 1,000 woman-years (-19.0; -31.5%). At ages 20–24, the corresponding rates are 226.0 and 166.1 (-59.9); at ages 25–29 they are 265.5 and 209.7 (-55.8). The combined share of the implied TFR attributable to ages 15–29 changes from 49.6% to 51.2%. A change in this share reflects redistribution across ages as well as changes in absolute fertility, and must not be read as direct evidence of postponement for individual women.

Later reproductive ages. At ages 30–34, ASFR changes from 250.1 to 181.8 (-68.3); at 35–39, from 178.1 to 134.4 (-43.7); and at 40–44, from 95.1 to 54.9 (-40.2). At ages 45–49, the rates are 38.1 and 26.2. These age bands are important because aggregate TFR can conceal continued childbearing at older ages even when adolescent fertility declines. The numerical pattern should not be interpreted causally without information on marriage, contraception, parity, and other determinants.

Comparison with the national reference. In 2000, the region's ASFR exceeded the derived national rate in 5 of seven age groups; in 2024–25, it exceeded the reference in 2. At the regional peak age in 2024–25 (25–29), its rate was 209.7, compared with 211.0 nationally (difference -1.3 per 1,000). Its

schedule-implied TFR was +0.02 births above or below the national-derived total in 2024–25. These comparisons identify the ages that contribute to regional divergence, without assuming that a national average represents the experience of every population subgroup.

Boundary qualification. This profile represents historical SNNPR as defined in the source ASFR tables, not the four present-day successor regions. Because the aggregate source does not itself document the 2024–25 geographic reconstruction, the apparent 2000–2024/25 difference must be treated as conditional on geographic comparability. The profile should not be juxtaposed uncritically with the successor-region TFR trajectories in Part II.

Cross-regional synthesis

Across the 11 historical geographies, 8 show a net reduction and 3 a net increase in the ASFR-implied TFR between the two endpoints. The largest absolute reduction is observed in Oromia (-1.86 births per woman); the largest increase is in Afar (+1.44). This cross-regional heterogeneity underscores why the national fertility transition should be read alongside age-specific regional schedules, not as a uniform decline.

The figures allow direct within-age comparisons across regions because the vertical scales are fixed. They do not establish statistically significant regional differences: the uploaded ASFR tables do not provide design-based standard errors or confidence intervals for each regional age-specific rate. The visual contrasts are descriptive. Likewise, the two-endpoint comparison does not establish monotonic trends between 2000 and 2024–25.

Summary table: ASFR-implied TFR

Geography	2000	2024–25	Change
National (derived)	5.52	4.05	-1.47
Tigray	5.34	4.62	-0.72
Afar	4.42	5.85	+1.44
Amhara	5.51	3.81	-1.70
Oromia	6.07	4.20	-1.86
Somali	5.07	6.45	+1.39
Benishangul-Gumuz	5.02	4.17	-0.85
SNNPR	5.57	4.07	-1.49
Gambella	4.39	3.87	-0.52
Harari	4.20	3.32	-0.89
Addis Ababa	1.84	2.31	+0.47
Dire Dawa	3.46	3.35	-0.12

Note: TFR here is $5 \times \Sigma(\text{ASFR per 1,000}) / 1,000$; values are calculated from the age-specific input tables and may differ from independently certified TFR series. “National (derived)” is the exposure-weighted aggregate of the 11 regional records.

PART III. Scope and evidentiary boundary

Part III develops Sections 4.6 and 4.7 of Fertility Levels and Trends. It does not contain birth-order-specific fertility, completed cohort histories, first-birth schedules, or parity progression ratios. Consequently, timing indicators are calculated transparently from the available ASFR; parity indicators are explained and specified for future estimation rather than presented as observed findings. This distinction prevents a methodological description from being mistaken for empirical evidence.

4.6 Birth timing and the age pattern of fertility

4.6.1 What ASFR can—and cannot—tell us

Total fertility rate (TFR) measures the synthetic lifetime number of births implied by current age-specific rates. The mean age of childbearing (MAC), calculated from the same schedule, measures the average age at which these period births occur. Two populations can have similar TFRs but different MACs: one may concentrate births at ages 20–29 while another distributes births more heavily across ages 30–39. Conversely, a declining TFR need not imply postponement: fertility may fall across all ages, including the older groups.

Here, MAC is calculated using conventional five-year age-group midpoints. It is an approximation to the mean age of period childbearing, not the observed mean age at first birth. In particular, it cannot establish that individual women delayed marriage or their first pregnancy. Such conclusions require birth-order and event-history data.

Formula 4.6.1. $MAC = [\sum (\text{age-group midpoint} \times ASFR)] / [\sum ASFR]$, summed over ages 15–49.

Formula 4.6.2. Contribution of age group a to TFR = $5 \times ASFR(a) / 1,000$. Formula 4.6.3. Percentage share of fertility at age a = $100 \times ASFR(a) / \sum ASFR$. The 5-year interval factor cancels in the MAC and percentage-share expressions.

4.6.2 National change: level versus age distribution

Aggregating regional weighted births and woman-years within each age group produces a national ASFR schedule with an implied TFR of 5.52 births per woman in 2000 and 4.05 in 2024–25. The midpoint-based MAC changes from 29.69 to 29.84 years (+0.15 years). The combined share of the fertility schedule at ages 15–24 changes from 30.4% to 27.5%, while the share at ages 35–49 changes from 24.9% to 24.0%. These are schedule-based composition measures, not birth-order or cohort estimates.

The national series is a derived aggregate of the 11 historical geographies, rather than an independently supplied national ASFR table. Rounded source rates and weighted exposures may cause small discrepancies. These timing calculations should therefore be described as secondary analysis of the certified Chapter 1 extract.

Age	ASFR 2000	ASFR 2024–25	Rate change	TFR contribution change
15-19	100.5	52.9	-47.6	-0.238
20-24	234.8	169.5	-65.3	-0.326
25-29	250.6	211.0	-39.6	-0.198
30-34	243.3	182.4	-60.9	-0.304
35-39	167.8	122.2	-45.6	-0.228
40-44	88.6	58.9	-29.7	-0.148
45-49	18.8	12.9	-5.9	-0.029

Table 4.6-A. National age-specific rates per 1,000 woman-years and arithmetic contribution to TFR change. Rates reconstructed from pooled regional weighted births and exposures.

4.6.3 Regional contrasts in the timing of childbearing

Historical geography	MAC 2000	MAC 2024–25	Change (years)	Share at ages 15–24 (%)
Tigray	29.9	30.2	+0.3	29.2 → 25.1
Afar	27.7	28.7	+1.0	41.0 → 35.3
Amhara	29.2	30.7	+1.5	34.2 → 22.9
Oromia	29.6	29.1	-0.5	30.3 → 30.5
Somali	28.6	30.2	+1.6	36.5 → 29.9
Benishangul-Gumuz	28.8	29.8	+1.0	35.6 → 30.0
SNNPR	30.6	30.4	-0.2	25.7 → 25.5
Gambella	28.6	29.1	+0.4	35.2 → 32.1
Harari	29.3	28.2	-1.1	31.4 → 34.5
Addis Ababa	28.7	29.8	+1.2	27.1 → 23.5
Dire Dawa	30.0	29.5	-0.6	23.4 → 27.6

Table 4.6-B. Midpoint-approximated mean age of period childbearing (MAC) and the early-age share of the ASFR schedule. Historical SNNPR is a single geography; it is not one of the four current southern successor regions.

Tigray

Between the two survey endpoints, the ASFR-implied TFR changes from 5.34 to 4.62 births per woman (-0.72). The estimated MAC moves from 29.93 to 30.18 years (+0.26 years). The modal five-year age band is 30-34 in 2000 and 30-34 in 2024–25. These results describe the cross-sectional age pattern of births, not the longitudinal behavior of a single cohort.

The share of fertility concentrated at ages 15–24 changes from 29.2% to 25.1%; the ages-35–49 share changes from 26.7% to 24.1%. The largest absolute age-specific shifts are at 15-19 (-47.5 births per 1,000 woman-years) and 35-39 (-34.8). The direction of MAC change should be interpreted

alongside these age-specific shifts: a higher MAC can arise because early-age fertility fell faster than later-age fertility, even when rates at older ages did not increase.

Afar

Between the two survey endpoints, the ASFR-implied TFR changes from 4.42 to 5.85 births per woman (+1.44). The estimated MAC moves from 27.73 to 28.73 years (+1.00 years). The modal five-year age band is 20-24 in 2000 and 20-24 in 2024–25. These results describe the cross-sectional age pattern of births, not the longitudinal behavior of a single cohort.

The share of fertility concentrated at ages 15–24 changes from 41.0% to 35.3%; the ages-35–49 share changes from 17.2% to 19.3%. The largest absolute age-specific shifts are at 30-34 (+87.3 births per 1,000 woman-years) and 25-29 (+74.2). The direction of MAC change should be interpreted alongside these age-specific shifts: a higher MAC can arise because early-age fertility fell faster than later-age fertility, even when rates at older ages did not increase.

Amhara

Between the two survey endpoints, the ASFR-implied TFR changes from 5.51 to 3.81 births per woman (-1.70). The estimated MAC moves from 29.19 to 30.73 years (+1.54 years). The modal five-year age band is 20-24 in 2000 and 30-34 in 2024–25. These results describe the cross-sectional age pattern of births, not the longitudinal behavior of a single cohort.

The share of fertility concentrated at ages 15–24 changes from 34.2% to 22.9%; the ages-35–49 share changes from 24.5% to 29.0%. The largest absolute age-specific shifts are at 15-19 (-104.7 births per 1,000 woman-years) and 20-24 (-98.1). The direction of MAC change should be interpreted alongside these age-specific shifts: a higher MAC can arise because early-age fertility fell faster than later-age fertility, even when rates at older ages did not increase.

Oromia

Between the two survey endpoints, the ASFR-implied TFR changes from 6.07 to 4.20 births per woman (-1.86). The estimated MAC moves from 29.55 to 29.09 years (-0.46 years). The modal five-year age band is 25-29 in 2000 and 25-29 in 2024–25. These results describe the cross-sectional age pattern of births, not the longitudinal behavior of a single cohort.

The share of fertility concentrated at ages 15–24 changes from 30.3% to 30.5%; the ages-35–49 share changes from 23.9% to 20.0%. The largest absolute age-specific shifts are at 30-34 (-96.4 births per 1,000 woman-years) and 35-39 (-89.2). The direction of MAC change should be interpreted alongside these age-specific shifts: a higher MAC can arise because early-age fertility fell faster than later-age fertility, even when rates at older ages did not increase.

Somali

Between the two survey endpoints, the ASFR-implied TFR changes from 5.07 to 6.45 births per woman (+1.39). The estimated MAC moves from 28.62 to 30.22 years (+1.60 years). The modal five-year age band is 20-24 in 2000 and 20-24 in 2024–25. These results describe the cross-sectional age pattern of births, not the longitudinal behavior of a single cohort.

The share of fertility concentrated at ages 15–24 changes from 36.5% to 29.9%; the ages-35–49 share changes from 21.9% to 26.7%. The largest absolute age-specific shifts are at 30-34 (+93.6 births per

1,000 woman-years) and 20-24 (+47.5). The direction of MAC change should be interpreted alongside these age-specific shifts: a higher MAC can arise because early-age fertility fell faster than later-age fertility, even when rates at older ages did not increase.

Benishangul-Gumuz

Between the two survey endpoints, the ASFR-implied TFR changes from 5.02 to 4.17 births per woman (-0.85). The estimated MAC moves from 28.84 to 29.83 years (+0.99 years). The modal five-year age band is 20-24 in 2000 and 25-29 in 2024–25. These results describe the cross-sectional age pattern of births, not the longitudinal behavior of a single cohort.

The share of fertility concentrated at ages 15–24 changes from 35.6% to 30.0%; the ages-35–49 share changes from 23.6% to 27.4%. The largest absolute age-specific shifts are at 20-24 (-56.4 births per 1,000 woman-years) and 15-19 (-51.0). The direction of MAC change should be interpreted alongside these age-specific shifts: a higher MAC can arise because early-age fertility fell faster than later-age fertility, even when rates at older ages did not increase.

SNNPR

Between the two survey endpoints, the ASFR-implied TFR changes from 5.57 to 4.07 births per woman (-1.49). The estimated MAC moves from 30.63 to 30.39 years (-0.24 years). The modal five-year age band is 25-29 in 2000 and 25-29 in 2024–25. These results describe the cross-sectional age pattern of births, not the longitudinal behavior of a single cohort.

The share of fertility concentrated at ages 15–24 changes from 25.7% to 25.5%; the ages-35–49 share changes from 28.0% to 26.5%. The largest absolute age-specific shifts are at 30-34 (-68.3 births per 1,000 woman-years) and 20-24 (-59.9). The direction of MAC change should be interpreted alongside these age-specific shifts: a higher MAC can arise because early-age fertility fell faster than later-age fertility, even when rates at older ages did not increase.

Geographic caution: “SNNPR” here denotes the historical aggregate used in the Chapter 1 ASFR extract. The data must not be attributed individually to Sidama, Central Ethiopia, South Ethiopia, or South West Ethiopia. Interpretation of 2000–2024/25 change is conditional on consistent historical-boundary reconstruction of the 2024–25 observations.

Gambella

Between the two survey endpoints, the ASFR-implied TFR changes from 4.39 to 3.87 births per woman (-0.52). The estimated MAC moves from 28.63 to 29.07 years (+0.44 years). The modal five-year age band is 25-29 in 2000 and 30-34 in 2024–25. These results describe the cross-sectional age pattern of births, not the longitudinal behavior of a single cohort.

The share of fertility concentrated at ages 15–24 changes from 35.2% to 32.1%; the ages-35–49 share changes from 20.6% to 20.8%. The largest absolute age-specific shifts are at 20-24 (-36.9 births per 1,000 woman-years) and 25-29 (-34.8). The direction of MAC change should be interpreted alongside these age-specific shifts: a higher MAC can arise because early-age fertility fell faster than later-age fertility, even when rates at older ages did not increase.

Harari

Between the two survey endpoints, the ASFR-implied TFR changes from 4.20 to 3.32 births per woman (-0.89). The estimated MAC moves from 29.32 to 28.17 years (-1.15 years). The modal five-year age band is 25-29 in 2000 and 25-29 in 2024–25. These results describe the cross-sectional age pattern of births, not the longitudinal behavior of a single cohort.

The share of fertility concentrated at ages 15–24 changes from 31.4% to 34.5%; the ages-35–49 share changes from 24.1% to 16.0%. The largest absolute age-specific shifts are at 35-39 (-82.1 births per 1,000 woman-years) and 30-34 (-57.0). The direction of MAC change should be interpreted alongside these age-specific shifts: a higher MAC can arise because early-age fertility fell faster than later-age fertility, even when rates at older ages did not increase.

Addis Ababa

Between the two survey endpoints, the ASFR-implied TFR changes from 1.84 to 2.31 births per woman (+0.47). The estimated MAC moves from 28.68 to 29.84 years (+1.16 years). The modal five-year age band is 25-29 in 2000 and 25-29 in 2024–25. These results describe the cross-sectional age pattern of births, not the longitudinal behavior of a single cohort.

The share of fertility concentrated at ages 15–24 changes from 27.1% to 23.5%; the ages-35–49 share changes from 14.1% to 19.9%. The largest absolute age-specific shifts are at 25-29 (+22.9 births per 1,000 woman-years) and 20-24 (+22.7). The direction of MAC change should be interpreted alongside these age-specific shifts: a higher MAC can arise because early-age fertility fell faster than later-age fertility, even when rates at older ages did not increase.

Dire Dawa

Between the two survey endpoints, the ASFR-implied TFR changes from 3.46 to 3.35 births per woman (-0.12). The estimated MAC moves from 30.03 to 29.46 years (-0.57 years). The modal five-year age band is 30-34 in 2000 and 25-29 in 2024–25. These results describe the cross-sectional age pattern of births, not the longitudinal behavior of a single cohort.

The share of fertility concentrated at ages 15–24 changes from 23.4% to 27.6%; the ages-35–49 share changes from 22.2% to 22.1%. The largest absolute age-specific shifts are at 30-34 (-36.4 births per 1,000 woman-years) and 40-44 (-26.1). The direction of MAC change should be interpreted alongside these age-specific shifts: a higher MAC can arise because early-age fertility fell faster than later-age fertility, even when rates at older ages did not increase.

4.6.4 Tempo effects: a caution against overinterpretation

Period TFR may be affected by shifts in the timing of births, but the two ASFR endpoints alone cannot identify a formal tempo distortion. A tempo-adjusted TFR requires a defensible estimate of changes in the mean age at childbearing by birth order and assumptions about how birth timing changes. Applying an unverified tempo-adjustment formula to all births could misstate quantum fertility. Accordingly, this chapter reports observed TFR and schedule-derived MAC, and deliberately does not publish a tempo-adjusted TFR.

4.7 Parity progression and fertility stopping

4.7.1 Distinguishing postponement, spacing, and stopping

A fall in births at ages 20–24 may reflect delayed entry into motherhood, longer intervals between births, lower progression to second or higher-order births, or a combination of these processes. ASFR by maternal age alone does not distinguish them. Parity progression concerns the probability that a woman with k births eventually has at least one additional birth; stopping behavior concerns the decision or outcome of ending childbearing at a given parity. Both require parity-specific data and an explicit exposure or cohort definition.

4.7.2 Core measures and recommended estimation

For a completed cohort, $PPR(k) = \text{number of women who have had at least } k+1 \text{ live births} / \text{number who have had at least } k \text{ live births}$. For $k = 0$, the denominator includes all women in the eligible cohort. The expression is a conditional progression proportion; it is not a causal estimate of desire to stop childbearing. For younger cohorts with incomplete reproductive histories, direct ratios are right-censored and can understate eventual progression.

The parity distribution should be reported as proportions of women with 0, 1, 2, 3, 4, and 5 or more children ever born, stratified by age/cohort and region. Birth-order-specific ASFRs should be calculated with birth histories and age-specific woman-years of exposure, using consistent definitions and DHS survey design. Median first-birth age requires a separate survival/event-history calculation, with appropriate censoring of women who have not yet had a first birth.

Indicator	Required data	Status in supplied ASFR files
Parity progression ratio	Children ever born or full birth histories by cohort	Not available
Mean age at first birth	First-birth timing and exposure	Not available
Birth-order-specific ASFR	Birth order, maternal age, exposure	Not available
Parity distribution	Children ever born and age/cohort	Not available
MAC of all births	Seven age-specific fertility rates	Calculated in Section 4.6

Table 4.7-A. Evidence audit. Absence of a measure in the supplied ASFR extract does not imply that it cannot be estimated from the original DHS microdata.

4.7.3 Interpreting the observed regional divergence

The age-specific findings are consistent with heterogeneous fertility transitions across Ethiopia. Where adolescent fertility has declined sharply, the age composition of births may shift upward even without increases in older-age rates. Where fertility remains elevated at ages 20–34, the TFR can remain high despite some adolescent decline. These observations provide useful hypotheses about postponement and stopping, but they do not establish the relative roles of contraceptive uptake,

desired family size, marriage timing, birth spacing, or parity-specific stopping. Testing those mechanisms requires the distinct reproductive-health and birth-history analyses developed elsewhere in the larger research program.

Methods, reproducibility, and limitations

National age-specific rates were recomputed from the sum of regional weighted births divided by the sum of regional weighted woman-years for each age group and endpoint. Regional MAC and fertility shares were computed from the ASFR schedule using age-group midpoints. The source provides two endpoints only; no intermediate survey trajectories are inferred. Survey design-based standard errors and confidence intervals for these derived timing statistics were not supplied and are not invented. The interpretation of historical SNNPR requires explicit verification of the source reconstruction. The five-group TFR display in Part II uses 14 current regions, whereas this ASFR extension retains 11 historical geographies. These frameworks should remain visibly distinct in figures and tables.

Part III establishes descriptive evidence on the timing of fertility and the methodological requirements for analyzing parity progression. Part IV can address data-quality diagnostics, synthesis, and cross-country benchmarking, but any new quantitative comparison must be supported by verified empirical sources rather than the illustrative tables in the original website chapter.

PART IV · Data quality, interpretation, and quarter-century synthesis · October 2026

4.8 Data quality, survey comparability, and evidentiary limits

4.8.1 Source hierarchy and certification

The central empirical source for the historical total fertility rate (TFR) series is the certified observed panel in worksheet 03_OBSERVED of

PROSPECTS2050_02_F01_TFR_HISTORICAL_TRAJECTORY_DIAGNOSTICS_AND_BACKTESTING_v1_0.xlsx. It contains 75 observations: one national estimate and 14 regional estimates for each of five survey rounds. The source explicitly defines TFR as the sum of seven five-year age-specific fertility rates for the 36 months preceding interview. Its validation-status field identifies the estimates as certified, with jackknife uncertainty and supporting evidence. This part uses only those observed estimates; the workbook's modeling and back-testing sheets are excluded.

The Chapter 4 Part II ASFR supplement is a distinct but complementary source. It compares 2000 and 2024–25 age-specific schedules using 11 historical regional geographies, including historical SNNPR. Its geographic units must not be conflated with the 14 current-region TFR series. In particular, the historical SNNPR ASFR profile cannot be read as the profile of Sidama, Central Ethiopia, South Ethiopia, or South West Ethiopia individually.

4.8.2 Sampling error and regional comparisons

Survey estimates are not census counts. Precision depends on the number and geographic distribution of respondents and clusters, fertility exposure, sampling design, and variability in births. The certified panel provides standard errors, lower and upper confidence limits, unweighted sample sizes, and cluster counts. Comparisons between two regional point estimates should therefore not be treated as statistically established differences solely because one plotted line lies above another. A formal difference test requires the appropriate design-based variance, including any covariance when applicable.

The five rounds are repeated cross-sectional surveys, not a panel following the same women over time. Consequently, a change in period TFR is a population-level change in the fertility schedule, not an observed change in completed family size for a fixed birth cohort. The 2024–25 survey should be described as the latest observed survey round, not as a measurement of the calendar year 2025 alone.

4.8.3 Period measurement, recall, and reporting

Period TFR relies on retrospectively reported live births and woman-time exposure. Potential threats include omitted births, misdated births, displacement of events around reference-period boundaries, age misstatement, and nonresponse. These risks can affect the youngest and oldest reproductive ages disproportionately. The consistency of national and regional trajectories across rounds is useful descriptive evidence, but it does not replace record-level diagnostics of birth dates, age reporting, sampling weights, and exposure reconstruction.

4.8.4 Geographic harmonization

The regional TFR panel uses current successor-region labels across the historical period, implying a geographic harmonization exercise. The integrity of such a series depends on correctly assigning historical survey clusters to present-day regions and documenting boundary ambiguities. Any remaining geographic uncertainty should be disclosed in the final chapter metadata. The ASFR supplement deliberately follows a different geographic rule—historical SNNPR retained intact—to avoid presenting unverified successor-region ASFRs. These two valid analytical geographies serve different questions and should remain visibly differentiated in tables, captions, and interpretations.

4.8.5 What the available evidence does not establish

The certified TFR panel does not itself identify causal determinants of regional fertility change. Associations with education, contraception, urbanization, marriage timing, economic conditions, displacement, or health-service access require independently verified covariate data and appropriate analyses. Likewise, the available ASFR schedules do not identify individual women's parity progression, contraceptive stopping behavior, or cohort-completed fertility. The discussion below therefore interprets patterns rather than attributing causation.

4.9 A quarter-century of fertility change: national and regional synthesis

4.9.1 National trajectory

Ethiopia's certified national TFR fell from 5.52 births per woman in 2000 to 4.05 in 2024–25, an absolute reduction of 1.47 births per woman (26.7%). The intervening survey estimates document a sustained, but not uniform, transition: 2000: 5.52, 2005: 5.41, 2011: 4.80, 2016: 4.56, 2024–25: 4.05. This quarter-century record is more informative than a simple endpoint comparison because it reveals how the national level changed across successive survey rounds without presuming that the same pace will continue.

The national figure is an aggregate of heterogeneous regional experiences. A national decline can coexist with rising TFR in individual regions, and the national level is influenced by both regional fertility schedules and the population distribution across regions. The certified panel provides region-specific rates, but it does not by itself provide a decomposition of national change into within-region fertility effects and changes in regional population weights. Accordingly, regional divergence should be described, not assigned an unsupported numerical contribution to the national decline.

Regional contrasts and transition typology

The largest observed absolute declines are Sidama (-2.77), South West Ethiopia (-2.30), Oromia (-1.87), Amhara (-1.70). These cases demonstrate that the national decline masks especially pronounced change in some geographies. By contrast, Addis Ababa (+0.47), Somali (+1.39), Afar (+1.44) in the endpoint comparison. These are descriptive contrasts in point estimates; confidence intervals and survey-design considerations remain necessary for inferential claims.

Tigray

TFR changed from 5.34 in 2000 to 4.63 in 2024–25 (-0.72 births per woman; -13.4%). Relative to the national series, the region was -0.18 births per woman in 2000 and +0.58 in 2024–25. Its four successive observed interval changes were -0.22, -0.56, +0.12, -0.06. The endpoint decline is consistent in direction with the national transition, though its magnitude and path are region-specific. These estimates should be interpreted as period fertility schedules rather than completed cohort fertility; changes in service access or social context are plausible hypotheses, not established explanations from this table alone.

Afar

TFR changed from 4.41 in 2000 to 5.85 in 2024–25 (+1.44 births per woman; +32.5%). Relative to the national series, the region was -1.11 births per woman in 2000 and +1.80 in 2024–25. Its four successive observed interval changes were +0.52, +0.02, +0.55, +0.36. The endpoint increase warrants special attention because it differs in direction from the national decline. These estimates should be interpreted as period fertility schedules rather than completed cohort fertility; changes in service access or social context are plausible hypotheses, not established explanations from this table alone.

Amhara

TFR changed from 5.51 in 2000 to 3.81 in 2024–25 (-1.70 births per woman; -30.9%). Relative to the national series, the region was -0.01 births per woman in 2000 and -0.24 in 2024–25. Its four successive observed interval changes were -0.43, -0.93, -0.43, +0.09. The endpoint decline is consistent in direction with the national transition, though its magnitude and path are region-specific. These estimates should be interpreted as period fertility schedules rather than completed cohort fertility; changes in service access or social context are plausible hypotheses, not established explanations from this table alone.

Oromia

TFR changed from 6.07 in 2000 to 4.20 in 2024–25 (-1.87 births per woman; -30.8%). Relative to the national series, the region was +0.55 births per woman in 2000 and +0.16 in 2024–25. Its four successive observed interval changes were +0.10, -0.54, -0.26, -1.17. The endpoint decline is consistent in direction with the national transition, though its magnitude and path are region-specific. These estimates should be interpreted as period fertility schedules rather than completed cohort fertility; changes in service access or social context are plausible hypotheses, not established explanations from this table alone.

Somali

TFR changed from 5.07 in 2000 to 6.45 in 2024–25 (+1.39 births per woman; +27.4%). Relative to the national series, the region was -0.46 births per woman in 2000 and +2.40 in 2024–25. Its four successive observed interval changes were +0.89, +1.12, +0.13, -0.75. The endpoint increase warrants special attention because it differs in direction from the national decline. These estimates should be interpreted as period fertility schedules rather than completed cohort fertility; changes in service access or social context are plausible hypotheses, not established explanations from this table alone.

Benishangul-Gumuz

TFR changed from 5.02 in 2000 to 4.17 in 2024–25 (-0.85 births per woman; -16.9%). Relative to the national series, the region was -0.50 births per woman in 2000 and +0.12 in 2024–25. Its four successive observed interval changes were +0.17, +0.01, -0.83, -0.19. The endpoint decline is consistent in direction with the national transition, though its magnitude and path are region-specific. These estimates should be interpreted as period fertility schedules rather than completed cohort fertility; changes in service access or social context are plausible hypotheses, not established explanations from this table alone.

Central Ethiopia

TFR changed from 5.22 in 2000 to 4.47 in 2024–25 (-0.75 births per woman; -14.4%). Relative to the national series, the region was -0.30 births per woman in 2000 and +0.42 in 2024–25. Its four successive observed interval changes were -0.03, -0.50, -0.67, +0.45. The endpoint decline is consistent in direction with the national transition, though its magnitude and path are region-specific. These estimates should be interpreted as period fertility schedules rather than completed cohort fertility; changes in service access or social context are plausible hypotheses, not established explanations from this table alone.

Sidama

TFR changed from 5.80 in 2000 to 3.03 in 2024–25 (-2.77 births per woman; -47.8%). Relative to the national series, the region was +0.28 births per woman in 2000 and -1.02 in 2024–25. Its four successive observed interval changes were +0.36, -1.42, -1.43, -0.27. The endpoint decline is consistent in direction with the national transition, though its magnitude and path are region-specific. These estimates should be interpreted as period fertility schedules rather than completed cohort fertility; changes in service access or social context are plausible hypotheses, not established explanations from this table alone.

South Ethiopia

TFR changed from 5.56 in 2000 to 4.63 in 2024–25 (-0.93 births per woman; -16.8%). Relative to the national series, the region was +0.04 births per woman in 2000 and +0.58 in 2024–25. Its four successive observed interval changes were -0.31, +0.03, -0.06, -0.59. The endpoint decline is consistent in direction with the national transition, though its magnitude and path are region-specific. These estimates should be interpreted as period fertility schedules rather than completed cohort fertility; changes in service access or social context are plausible hypotheses, not established explanations from this table alone.

South West Ethiopia

TFR changed from 6.19 in 2000 to 3.88 in 2024–25 (-2.30 births per woman; -37.3%). Relative to the national series, the region was +0.66 births per woman in 2000 and -0.17 in 2024–25. Its four successive observed interval changes were +0.35, -1.41, -0.35, -0.88. The endpoint decline is consistent in direction with the national transition, though its magnitude and path are region-specific. These estimates should be interpreted as period fertility schedules rather than completed cohort fertility; changes in service access or social context are plausible hypotheses, not established explanations from this table alone.

Gambella

TFR changed from 4.39 in 2000 to 3.87 in 2024–25 (-0.52 births per woman; -11.8%). Relative to the national series, the region was -1.13 births per woman in 2000 and -0.18 in 2024–25. Its four successive observed interval changes were -0.39, -0.05, -0.48, +0.41. The endpoint decline is consistent in direction with the national transition, though its magnitude and path are region-specific. These estimates should be interpreted as period fertility schedules rather than completed cohort fertility; changes in service access or social context are plausible hypotheses, not established explanations from this table alone.

Harari

TFR changed from 4.20 in 2000 to 3.32 in 2024–25 (-0.89 births per woman; -21.1%). Relative to the national series, the region was -1.32 births per woman in 2000 and -0.73 in 2024–25. Its four successive observed interval changes were -0.43, +0.04, +0.24, -0.74. The endpoint decline is consistent in direction with the national transition, though its magnitude and path are region-specific. These estimates should be interpreted as period fertility schedules rather than completed cohort fertility; changes in service access or social context are plausible hypotheses, not established explanations from this table alone.

Addis Ababa

TFR changed from 1.84 in 2000 to 2.31 in 2024–25 (+0.47 births per woman; +25.4%). Relative to the national series, the region was -3.68 births per woman in 2000 and -1.73 in 2024–25. Its four successive observed interval changes were -0.47, +0.13, +0.31, +0.49. The endpoint increase warrants special attention because it differs in direction from the national decline. These estimates should be interpreted as period fertility schedules rather than completed cohort fertility; changes in service access or social context are plausible hypotheses, not established explanations from this table alone.

Dire Dawa

TFR changed from 3.46 in 2000 to 3.35 in 2024–25 (-0.12 births per woman; -3.3%). Relative to the national series, the region was -2.06 births per woman in 2000 and -0.70 in 2024–25. Its four successive observed interval changes were +0.16, -0.26, -0.26, +0.25. The endpoint decline is consistent in direction with the national transition, though its magnitude and path are region-specific. These estimates should be interpreted as period fertility schedules rather than completed cohort fertility; changes in service access or social context are plausible hypotheses, not established explanations from this table alone.

4.9.4 What age-specific schedules add

The companion ASFR supplement adds the age distribution of fertility to the TFR evidence. A similar TFR can arise from different schedules: one geography may concentrate births in ages 20–29, while another retains comparatively high rates in later reproductive ages. Endpoint ASFR comparisons can identify where declines or increases are concentrated, and the mean age of period childbearing summarizes the location of the schedule. They do not, without additional cohort or parity data, prove postponement of first birth, longer spacing, or stopping at a particular family size.

4.9.5 Interpretation for policy and research

The geographic heterogeneity in the observed series argues against a single nationwide account of fertility change. Future explanatory work should integrate verified region-specific measures of contraceptive use, desired family size, education, union formation, child survival, and service accessibility, while considering uncertainty and the historical changes in regional boundaries. For public-health planning, the important empirical point is not that every region has followed the same transition, but that reproductive-health needs differ in both intensity and age pattern.

4.10 Conclusions: the first quarter-century

Across five EDHS rounds, Ethiopia's national TFR declined by 26.7% between 2000 and 2024–25. Yet the national summary conceals substantial geographic variation in both levels and trajectories. The 14-region TFR analysis establishes the spatial pattern of this change, while the 11-historical-region ASFR supplement illuminates its age structure. Taken together, these analyses provide a bounded empirical account of a quarter-century of fertility transition: substantial national change, uneven regional movement, and persistent differences in the ages at which childbearing occurs.

The chapter ends where the observed evidence ends—in the 2024–25 EDHS. It makes no claim about future fertility levels. Its lasting contribution is to establish a reproducible historical benchmark against which subsequent demographic evidence can be evaluated.

Chapter 4 | Discussion

Ethiopia's fertility transition, 2000–2024/25

1. A substantial national decline, but not a completed transition

Ethiopia's total fertility rate (TFR) fell from 5.52 births per woman in 2000 to 4.05 in 2024–25, a reduction of 1.47 births, or 26.7%. The intermediate estimates—5.41 in 2005, 4.80 in 2011, and 4.56 in 2016—show a transition that unfolded over successive surveys rather than as a single abrupt shift. The distinction matters: the national endpoint documents sustained change, while the intervening observations reveal variation in the pace of decline. A TFR of 4.05 nevertheless remains well above replacement-level fertility; the evidence therefore supports the characterization of an ongoing transition, not its completion.

The wider demographic literature cautions against interpreting fertility decline as an automatic or uniform response to socioeconomic modernization. Reproductive preferences, marriage patterns, access to contraception, and institutional context can interact in different ways across populations (Bongaarts & Casterline, 2013; Bongaarts & Casterline, 2018). The present chapter documents the outcome—changes in observed fertility—but its descriptive estimates alone do not establish the causal weight of these mechanisms.

2. Regional divergence is central to the Ethiopian story

The national average conceals sharply different regional pathways. Between 2000 and 2024–25, the certified successor-region series show large absolute TFR reductions in Sidama (–2.77 births per woman), South West Ethiopia (approximately –2.30), Oromia (–1.87), and Amhara (–1.70). These are not interchangeable experiences: regions that began at different fertility levels can display similar endpoint values after different magnitudes and sequences of change. The individual regional profiles and common-scale figures in Part II are therefore analytically preferable to ranking regions solely by their final TFR.

Afar and Somali present the most consequential counterpoint to the national trend. Their endpoint estimates increased by approximately 1.44 and 1.39 births per woman, respectively, despite the countrywide decline. These contrasts should not be flattened into a claim that every locality within either region experienced rising fertility. They are regional survey estimates, subject to sampling error and the composition of the populations observed. They do, however, establish that the national transition cannot be treated as a universal regional trajectory.

An additional caution applies to Addis Ababa, for which the chapter's certified endpoint comparison shows an increase of approximately 0.47 births per woman. A positive endpoint difference should not

be interpreted as evidence of a durable reversal without examining the full five-survey trajectory, precision intervals, and the possibility of changes in the timing of births. The appropriate interpretation is descriptive and survey-specific, rather than a categorical statement about long-run urban fertility behavior.

3. Age-specific fertility reveals mechanisms hidden by TFR

TFR summarizes the combined contribution of seven reproductive age groups. It does not show whether fertility decline is concentrated among adolescents, among women in their twenties, or later in the reproductive life course. The age-specific fertility rate (ASFR) supplement addresses this limitation by comparing the 2000 and 2024–25 schedules for the 11 historical geographic categories. In Tigray, for example, ASFR at ages 15–19 declined from 99.1 to 51.6 births per 1,000 woman-years; in Afar, the rate at ages 20–24 rose from 229.1 to 302.4. These age-specific observations expose different patterns of change that would be obscured by a single TFR statistic.

Changes in the age distribution of fertility may reflect shifts in marriage, contraceptive behavior, desired family size, birth intervals, or the timing of childbearing. Yet a comparison of period ASFR schedules cannot by itself identify which mechanism predominated. In particular, a shift toward older ages should not automatically be labeled postponement of first births, and a decline at older ages should not automatically be labeled deliberate stopping. The distinction between reproductive preferences and realized outcomes is well established in demographic research (Bongaarts & Casterline, 2018).

The mean age of period childbearing, computed from age-specific rates, offers a useful summary of where fertility is concentrated across ages. It is not equivalent to the mean age at first birth. Likewise, the chapter does not estimate parity progression ratios from the uploaded ASFR tables, because those require birth-order and parity histories. Preserving these distinctions is essential to avoid turning a descriptive fertility schedule into an unsupported behavioral explanation.

4. Why TFR and ASFR use different regional geographies

The TFR analysis reports the national total and 14 current regions, including Central Ethiopia, Sidama, South Ethiopia, and South West Ethiopia. The historical fertility reconstruction underlying that series used harmonized regional allocations and validation checks developed in Chapter 1 of the broader twelve-chapter research program. By contrast, the ASFR source tables available for this chapter retain the historical Southern Nations, Nationalities and Peoples' Region (SNNPR) as one analytical geography. Their denominators and birth counts are not supplied separately for the four successor regions.

This is a substantive limitation, not merely a labeling issue. An age-specific rate requires births and woman-years of exposure in each age group for each geographic unit. Dividing the historical SNNPR ASFR schedule among its successors using population shares or their TFR levels would not recover those underlying age-specific numerators and denominators. Accordingly, Panel E of the ASFR supplement compares historical SNNPR with the national schedule, while the TFR figures retain the four successor regions. The two analyses answer related questions but should not be treated as geographically identical.

The 2024–25 historical-SNNPR ASFR values are interpreted as harmonized historical-geography estimates only to the extent supported by the Chapter 1 reconstruction. The original geographic crosswalk, source microdata, and validation logs should accompany the reproducibility archive before external release of disaggregated results.

5. Statistical uncertainty, survey comparability, and interpretation

The five EDHS rounds are repeated cross-sectional surveys rather than longitudinal observations of the same women. Fertility rates derived from birth histories are period estimates and are sensitive to sample design, reporting accuracy, reference-period definitions, and age-specific exposure. A difference between two regional point estimates does not necessarily establish a statistically significant change. Especially for smaller regions and disaggregated age groups, design-based confidence intervals and effective sample sizes are essential to a formal assessment.

The 2024–25 survey documentation identifies the Ethiopian Statistical Service as the implementing institution and ICF as a technical partner (Ethiopian Statistical Service [ESS] & ICF, 2025). That documentation provides the primary survey context; the chapter’s reconstructed regional series remain analytical products whose estimation rules, boundary crosswalks, and certification tests must be documented separately. The national ASFR schedule derived from pooled regional births and woman-years should also be distinguished from an independently published national ASFR series, even where its implied TFR closely matches the certified national estimate.

Cross-survey comparisons also require restraint when discussing conflict, displacement, or disruptions to fieldwork. Such conditions may affect population coverage or data collection, but this chapter does not independently quantify those effects. The empirical evidence should be read as the best available survey-based reconstruction under stated assumptions, not as a complete account of every population movement or change in fertility behavior.

6. Implications for public health and demographic research

The coexistence of national decline and regional divergence argues for geographically differentiated reproductive-health analysis. Where adolescent ASFR remains high, the questions include early childbearing and access to age-appropriate reproductive-health information and services. Where fertility is concentrated at later ages, birth spacing, reproductive intentions, and maternal-health needs may be more relevant research priorities. These are implications for investigation and service planning, not causal conclusions drawn directly from the ASFR curves.

The literature emphasizes that both the demand for smaller families and the capacity to implement reproductive preferences influence fertility trajectories (Bongaarts & Casterline, 2013, 2018). A next analytical step would link the certified fertility schedules to harmonized measures of women’s education, contraceptive use, union formation, child survival, wealth, and residence, while maintaining survey design and geographic comparability. Such analyses could test explanations suggested by the present descriptive patterns rather than presuming them.

The central finding of the quarter-century record is thus twofold: Ethiopia experienced a marked national fertility decline, and that decline was neither geographically uniform nor age-pattern

invariant. Reading TFR and ASFR together—while respecting their different regional geographies—produces a more informative account of fertility transition than either indicator alone. The chapter ends at the observed 2024–25 survey, without forecasting future fertility.

Data provenance and reproducibility

The empirical findings in Chapter 4 derive from original analyses of Ethiopian Demographic and Health Survey (EDHS) data, rather than from numerical estimates reported in the interpretive literature cited above.

The total fertility rate (TFR) analysis uses the certified historical panel documented in Adugna (2026), covering the national population and 14 current regions across five survey rounds: 2000, 2005, 2011, 2016, and 2024–25.

The age-specific fertility rate (ASFR) analysis draws on Chapter 1 reconstruction outputs and compares 2000 with 2024–25 using 11 historical regional geographies, including historical SNNPR. The national ASFR reconstruction from regional weighted births and exposure should be independently validated against official or separately certified national ASFR estimates before publication.

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