# Web Appendix
# Projecting sex imbalances at birth at global, regional, and national levels from 2018 to 2100: scenario-based Bayesian probabilistic projections of the sex ratio at birth and missing female births

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# List of Abbreviations

| | |
|---|---|
| AMFB | Annual number of Missing Female Births |
| CMFB | Cumulative number of Missing Female Births |
| ENAN | the combination of countries in Europe, North America, Australia and New Zealand |
| SRB | Sex Ratio at Birth |
| TFR | Total Fertility Rate |
| WPP | World Population Prospect |

# 1 Projection Scenarios

The method to produce the scenario-based projections is described in [2]. In this paper, Scenario S1 corresponds to S1 and Scenario S2 is equivalent to S3 in [2].

# 2 Supplementary Tables

| **Scenario type** | **[212] Country** |
|---|---|
| Two different scenarios: for countries at risk of SRB inflation, but without strong statistical evidence of SRB inflation | [17] Afghanistan; Bangladesh; Egypt; Gambia; Jordan; Mali; Mauritania; Morocco; Nepal; Nigeria; Pakistan; Senegal; Singapore; Tajikistan; Tanzania; Turkey; Uganda |
| One scenario: for countries with strong statistical evidence of SRB inflation | [12] Albania; Armenia; Azerbaijan; China; Georgia; Hong Kong, SAR of China; India; Republic of Korea; Montenegro; Taiwan, Province of China; Tunisia; Vietnam |
| One scenario: for countries not at risk of SRB inflation | [183] Algeria; Andorra; Angola; Antigua and Barbuda; Arab Emirates; Argentina; Aruba; Australia; Austria; Bahamas; Bahrain; Barbados; Belarus; Belgium; Belize; Benin; Bhutan; Bolivia (Plurinational State of); Bosnia and Herzegovina; Botswana; Brazil; Brunei; Bulgaria; Burkina Faso; Burundi; Cote d'Ivoire; Cambodia; Cameroon; Canada; Cape Verde; Central African Republic; Chad; Channel Islands; Chile; Macao, SAR of China; Colombia; Comoros; Republic of the Congo; Democratic Republic of the Congo; Cook Islands; Costa Rica; Croatia; Cuba; Curacao; Cyprus; Czech Republic; Denmark; Djibouti; Dominica; Dominican Republic; Ecuador; El Salvador; Equatorial Guinea; Eritrea; Estonia; Ethiopia; Fiji; Finland; France; French Guiana; French Polynesia; Gabon; Germany; Ghana; Greece; Grenada; Guadeloupe; Guam; Guatemala; Guinea; Guinea-Bissau; Guyana; Haiti; Honduras; Hungary; Iceland; Indonesia; Iran (Islamic Republic of); Iraq; Ireland; Israel; Italy; Jamaica; Japan; Kazakhstan; Kenya; Kiribati; Democratic People's Republic of Korea; Kuwait; Kyrgyz Republic; Laos; Latvia; Lebanon; Lesotho; Liberia; Libya; Lithuania; Luxembourg; Macedonia; Madagascar; Malawi; Malaysia; Maldives; Malta; Marshall Islands; Martinique; Mauritius; Mayotte; Mexico; Micronesia; Republic of Moldova; Monaco; Mongolia; Mozambique; Myanmar; Namibia; Nauru; Netherlands; New Caledonia; New Zealand; Nicaragua; Niger; Niue; Norway; Oman; Palau; Panama; Papua New Guinea; Paraguay; Peru; Philippines; Poland; Portugal; Puerto Rico; Qatar; Reunion; Romania; Russian Federation; Rwanda; Saint Kitts and Nevis; Saint Lucia; Samoa; San Marino; Sao Tome and Principe; Saudi Arabia; Serbia; Seychelles; Sierra Leone; Slovakia; Slovenia; Solomon Islands; Somalia; South Africa; South Sudan; Spain; Sri Lanka; Saint Vincent and the Grenadines; State of Palestine; Sudan; Suriname; Swaziland; Sweden; Switzerland; Syria; Thailand; Timor-Leste; Togo; Tonga; Trinidad and Tobago; Turkmenistan; Tuvalu; United Kingdom; United States of America; Ukraine; Uruguay; United States Virgin Islands; Uzbekistan; Vanuatu; Venezuela (Bolivarian Republic of); Western Sahara; Yemen; Zambia; Zimbabwe |

Table 1: **Type of SRB projections expected by country.** Numbers in the red are the number of countries fall into each category.

| World/Region | Sex Ratio at Birth | | | | | |
|---|---|---|---|---|---|---|
| | Estimate | | Projection (Scenario 1) | | Projection (Scenario 2) | |
| | Regional Baseline | 2017 | 2030 | 2100 | 2030 | 2100 |
| World | – | 1.067 [1.058; 1.076] | 1.052 [1.045; 1.062] | 1.045 [1.040; 1.050] | 1.054 [1.046; 1.064] | 1.048 [1.041; 1.058] |
| southern Asia | 1.052 [1.040; 1.063] | 1.083 [1.065; 1.102] | 1.061 [1.039; 1.086] | 1.053 [1.035; 1.072] | 1.067 [1.043; 1.095] | 1.054 [1.035; 1.074] |
| ENAN | 1.058 [1.055; 1.061] | 1.054 [1.051; 1.058] | 1.055 [1.048; 1.062] | 1.055 [1.047; 1.063] | 1.055 [1.048; 1.062] | 1.055 [1.047; 1.063] |
| northern Africa | 1.050 [1.036; 1.064] | 1.050 [1.036; 1.065] | 1.052 [1.035; 1.069] | 1.053 [1.035; 1.072] | 1.060 [1.039; 1.115] | 1.054 [1.035; 1.090] |
| sub-Saharan Africa | 1.031 [1.027; 1.036] | 1.033 [1.027; 1.039] | 1.033 [1.027; 1.040] | 1.033 [1.026; 1.040] | 1.034 [1.027; 1.041] | 1.038 [1.029; 1.058] |
| Latin America and the Caribbean | 1.041 [1.037; 1.045] | 1.044 [1.036; 1.053] | 1.043 [1.035; 1.052] | 1.043 [1.035; 1.051] | 1.043 [1.035; 1.052] | 1.043 [1.035; 1.051] |
| western Asia | 1.050 [1.044; 1.056] | 1.053 [1.044; 1.062] | 1.052 [1.043; 1.061] | 1.051 [1.042; 1.061] | 1.054 [1.044; 1.070] | 1.051 [1.042; 1.061] |
| Caucasus and central Asia | 1.062 [1.050; 1.075] | 1.075 [1.066; 1.083] | 1.066 [1.056; 1.077] | 1.064 [1.053; 1.075] | 1.067 [1.057; 1.082] | 1.065 [1.054; 1.082] |
| southeastern Asia | 1.063 [1.055; 1.072] | 1.073 [1.061; 1.086] | 1.068 [1.056; 1.083] | 1.064 [1.053; 1.075] | 1.068 [1.056; 1.083] | 1.064 [1.053; 1.075] |
| eastern Asia | 1.063 [1.054; 1.072] | 1.134 [1.073; 1.188] | 1.073 [1.044; 1.145] | 1.062 [1.040; 1.085] | 1.073 [1.044; 1.145] | 1.062 [1.040; 1.085] |
| Oceania | 1.067 [1.058; 1.077] | 1.067 [1.046; 1.089] | 1.068 [1.045; 1.089] | 1.067 [1.045; 1.089] | 1.068 [1.045; 1.089] | 1.067 [1.045; 1.089] |

Table 2: **Global and regional projections of sex ratio at birth, by scenario.** Region groupings are in the estimation paper [1]. The median projections are the numbers before the brackets. The numbers inside the brackets are the 95% uncertainty intervals of the median projections. ENAN: the combination of countries in Europe, North America, Australia, and New Zealand.

| Country (Region) | Inflation End Year | Cumulative Number of Missing Female Births | |
|---|---|---|---|
| | | ,000 (1970–2017) | ,000 (2018–2100) |
| India<br>(southern Asia) | 2033<br>[2021; 2050] | 20,991<br>[15,672; 26,651] | 3,589<br>[494; 9,735] |
| Albania<br>(ENAN) | 2024<br>[2016; 2043] | 23<br>[13; 39] | 2<br>[0; 8] |
| Montenegro<br>(ENAN) | 2024<br>[2014; 2043] | 5<br>[2; 8] | 0<br>[0; 1] |
| Tunisia<br>(northern Africa) | 2021<br>[2012; 2039] | 72<br>[37; 110] | 4<br>[0; 22] |
| Armenia<br>(Caucasus and central Asia) | 2029<br>[2020; 2042] | 39<br>[32; 45] | 5<br>[1; 15] |
| Azerbaijan<br>(Caucasus and central Asia) | 2031<br>[2019; 2049] | 140<br>[115; 168] | 33<br>[2; 99] |
| Georgia<br>(Caucasus and central Asia) | 2016<br>[2008; 2027] | 22<br>[15; 34] | 0<br>[0; 2] |
| Vietnam<br>(southeastern Asia) | 2036<br>[2017; 2061] | 523<br>[274; 807] | 432<br>[0; 1,757] |
| China<br>(eastern Asia) | 2030<br>[2017; 2051] | 23,871<br>[17,012; 31,276] | 4,024<br>[0; 14,106] |
| Hong Kong, SAR of China<br>(eastern Asia) | 2013<br>[2012; 2014] | 13<br>[10; 17] | 0<br>[0; 0] |
| Republic of Korea<br>(eastern Asia) | 2006<br>[1997; 2011] | 277<br>[230; 326] | 0<br>[0; 0] |
| Taiwan, Province of China<br>(eastern Asia) | 2023<br>[2012; 2041] | 94<br>[47; 145] | 5<br>[0; 22] |

Table 3: **Scenario S1 projection results for the 12 countries with strong statistical evidence of SRB inflation.** Median estimates/projections are numbers before the brackets. Numbers in the brackets are 95% uncertainty intervals. Countries are presented by region.

Table 4: **Scenario S1: Average AMFB for periods 2018–2030, 2031–2100, 2018–2100 and CMFB for periods 2018–2030, 2031–2100, 2018–2100, by country.** AMFB: Annual Number of Missing Female Births. CMFB: Cumulative Number of Missing Female Births. *: countries at risk of future SRB inflation. Countries without * are those with past/ongoing SRB inflation. Countries are presented by region. Median estimates are the numbers before the brackets. Numbers in brackets are 95% uncertainty intervals. Proportions may not sum up to 100%, due to rounding. Region "ENAN" refers to the combination of countries in Europe, North America, Australia, and New Zealand.

| Country (Region) | Scenario S1 | | | | | | |
|---|---|---|---|---|---|---|---|
| | AMFB (in ,000) | | | CMFB (in ,000) | | | % to total CMFB |
| | 2018–2030 | 2031–2100 | 2018–2100 | 2018–2030 | 2031–2100 | 2018–2100 | 2018–2100 |
| Afghanistan* (southern Asia) | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0.0 [0.0; 0.0] |
| Bangladesh* (southern Asia) | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0.0 [0.0; 0.0] |
| India (southern Asia) | 245 [38; 540] | 6 [0; 46] | 43 [6; 117] | 3,191 [494; 7,024] | 397 [0; 3,194] | 3,589 [494; 9,735] | 44.3 [7.5; 90.8] |
| Nepal* (southern Asia) | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0.0 [0.0; 0.0] |
| Pakistan* (southern Asia) | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0.0 [0.0; 0.0] |
| Albania (ENAN) | 0 [0; 1] | 0 [0; 0] | 0 [0; 0] | 2 [0; 7] | 0 [0; 2] | 2 [0; 8] | 0.0 [0.0; 0.1] |
| Montenegro (ENAN) | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 1] | 0 [0; 0] | 0 [0; 1] | 0.0 [0.0; 0.0] |
| Egypt* (northern Africa) | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0.0 [0.0; 0.0] |
| Morocco* (northern Africa) | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0.0 [0.0; 0.0] |
| Tunisia (northern Africa) | 0 [0; 1] | 0 [0; 0] | 0 [0; 0] | 3 [0; 19] | 0 [0; 3] | 4 [0; 22] | 0.0 [0.0; 0.4] |
| Gambia* (sub-Saharan Africa) | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0.0 [0.0; 0.0] |
| Mali* (sub-Saharan Africa) | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0.0 [0.0; 0.0] |
| Mauritania* (sub-Saharan Africa) | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0.0 [0.0; 0.0] |
| Nigeria* (sub-Saharan Africa) | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0.0 [0.0; 0.0] |
| Senegal* (sub-Saharan Africa) | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0.0 [0.0; 0.0] |
| Tanzania* (sub-Saharan Africa) | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0.0 [0.0; 0.0] |
| Uganda* (sub-Saharan Africa) | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0.0 [0.0; 0.0] |
| Jordan* (western Asia) | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0.0 [0.0; 0.0] |
| Turkey* (western Asia) | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0.0 [0.0; 0.0] |
| Armenia (Caucasus and central Asia) | 0 [0; 1] | 0 [0; 0] | 0 [0; 0] | 5 [1; 12] | 0 [0; 3] | 5 [1; 15] | 0.1 [0.0; 0.3] |
| Azerbaijan (Caucasus and central Asia) | 2 [0; 6] | 0 [0; 0] | 0 [0; 1] | 31 [2; 72] | 2 [0; 32] | 33 [2; 99] | 0.4 [0.0; 2.1] |
| Georgia (Caucasus and central Asia) | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 2] | 0 [0; 0] | 0 [0; 2] | 0.0 [0.0; 0.0] |
| Tajikistan* (Caucasus and central Asia) | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0.0 [0.0; 0.0] |
| Singapore* (southeastern Asia) | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0.0 [0.0; 0.0] |
| Vietnam (southeastern Asia) | 28 [0; 75] | 1 [0; 12] | 5 [0; 21] | 360 [0; 970] | 72 [0; 874] | 432 [0; 1,757] | 5.3 [0.0; 28.8] |

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**Table 4 – continued from previous page**

| Country (Region) | Scenario S1 | | | | | | |
|---|---|---|---|---|---|---|---|
| | AMFB (in ,000) | | | CMFB (in ,000) | | | % to total CMFB |
| | 2018–2030 | 2031–2100 | 2018–2100 | 2018–2030 | 2031–2100 | 2018–2100 | 2018–2100 |
| China (eastern Asia) | 283 [0; 753] | 5 [0; 72] | 48 [0; 170] | 3,682 [0; 9,783] | 342 [0; 5,042] | 4,024 [0; 14,106] | 49.7 [0.0; 86.8] |
| Hong Kong, SAR of China (eastern Asia) | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0.0 [0.0; 0.0] |
| Republic of Korea (eastern Asia) | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0.0 [0.0; 0.0] |
| Taiwan, Province of China (eastern Asia) | 0 [0; 1] | 0 [0; 0] | 0 [0; 0] | 4 [0; 18] | 0 [0; 4] | 5 [0; 22] | 0.1 [0.0; 0.4] |

Table 5: **Scenario S2: Average AMFB for periods 2018–2030, 2031–2100, 2018–2100 and CMFB for periods 2018–2030, 2031–2100, 2018–2100, by country.** AMFB: Annual Number of Missing Female Births. CMFB: Cumulative Number of Missing Female Births. *: countries at risk of future SRB inflation. Countries without * are those with past/ongoing SRB inflation. Countries are presented by region. Median estimates are the numbers before the brackets. Numbers in brackets are 95% uncertainty intervals. Proportions may not sum up to 100%, due to rounding. Region "ENAN" refers to the combination of countries in Europe, North America, Australia, and New Zealand.

| Country (Region) | Scenario S2 | | | | | | |
|---|---|---|---|---|---|---|---|
| | AMFB (in ,000) | | | CMFB (in ,000) | | | % to total CMFB |
| | 2018–2030 | 2031–2100 | 2018–2100 | 2018–2030 | 2031–2100 | 2018–2100 | 2018–2100 |
| Afghanistan* (southern Asia) | 0 [0; 31] | 9 [0; 25] | 8 [0; 22] | 0 [0; 407] | 624 [22; 1,778] | 624 [36; 1,848] | 2.7 [0.1; 7.9] |
| Bangladesh* (southern Asia) | 25 [0; 135] | 13 [0; 42] | 15 [0; 46] | 330 [0; 1,751] | 882 [0; 2,941] | 1,213 [2; 3,787] | 5.2 [0.0; 15.7] |
| India (southern Asia) | 245 [38; 540] | 6 [0; 46] | 43 [6; 117] | 3,191 [494; 7,024] | 397 [0; 3,194] | 3,589 [494; 9,735] | 15.5 [2.0; 36.4] |
| Nepal* (southern Asia) | 9 [0; 25] | 1 [0; 6] | 2 [0; 8] | 112 [0; 323] | 89 [0; 447] | 201 [1; 666] | 0.9 [0.0; 3.0] |
| Pakistan* (southern Asia) | 0 [0; 172] | 45 [0; 134] | 38 [0; 117] | 0 [0; 2,240] | 3,122 [0; 9,402] | 3,122 [34; 9,685] | 13.5 [0.2; 34.7] |
| Albania (ENAN) | 0 [0; 1] | 0 [0; 0] | 0 [0; 0] | 2 [0; 7] | 0 [0; 2] | 2 [0; 8] | 0.0 [0.0; 0.0] |
| Montenegro (ENAN) | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 1] | 0 [0; 0] | 0 [0; 1] | 0.0 [0.0; 0.0] |
| Egypt* (northern Africa) | 0 [0; 66] | 21 [0; 67] | 18 [0; 58] | 0 [0; 854] | 1,472 [0; 4,683] | 1,472 [0; 4,784] | 6.3 [0.0; 19.5] |
| Morocco* (northern Africa) | 6 [0; 30] | 3 [0; 11] | 4 [0; 11] | 74 [0; 389] | 238 [0; 800] | 312 [0; 949] | 1.3 [0.0; 4.2] |
| Tunisia (northern Africa) | 0 [0; 1] | 0 [0; 0] | 0 [0; 0] | 3 [0; 19] | 0 [0; 3] | 4 [0; 22] | 0.0 [0.0; 0.1] |
| Gambia* (sub-Saharan Africa) | 0 [0; 0] | 1 [0; 3] | 1 [0; 2] | 0 [0; 6] | 58 [0; 193] | 58 [0; 193] | 0.3 [0.0; 0.8] |
| Mali* (sub-Saharan Africa) | 0 [0; 1] | 8 [0; 28] | 6 [0; 24] | 0 [0; 19] | 528 [0; 1,957] | 528 [0; 1,957] | 2.3 [0.0; 8.1] |
| Mauritania* (sub-Saharan Africa) | 0 [0; 0] | 1 [0; 6] | 1 [0; 5] | 0 [0; 2] | 101 [0; 386] | 101 [0; 387] | 0.4 [0.0; 1.6] |
| Nigeria* (sub-Saharan Africa) | 0 [0; 7] | 58 [0; 246] | 49 [0; 207] | 0 [0; 88] | 4,050 [0; 17,208] | 4,050 [0; 17,214] | 17.5 [0.0; 47.9] |
| Senegal* (sub-Saharan Africa) | 0 [0; 1] | 6 [0; 20] | 5 [0; 17] | 0 [0; 13] | 399 [0; 1,417] | 399 [0; 1,422] | 1.7 [0.0; 6.0] |
| Tanzania* (sub-Saharan Africa) | 0 [0; 3] | 23 [0; 92] | 19 [0; 78] | 0 [0; 37] | 1,589 [0; 6,458] | 1,589 [0; 6,460] | 6.9 [0.0; 23.9] |
| Uganda* (sub-Saharan Africa) | 0 [0; 25] | 15 [0; 46] | 13 [0; 39] | 0 [0; 325] | 1,043 [20; 3,203] | 1,043 [26; 3,251] | 4.5 [0.1; 13.5] |
| Jordan* (western Asia) | 1 [0; 7] | 1 [0; 4] | 1 [0; 4] | 15 [0; 96] | 87 [0; 274] | 102 [5; 309] | 0.4 [0.0; 1.4] |
| Turkey* (western Asia) | 4 [0; 28] | 1 [0; 14] | 1 [0; 14] | 54 [0; 359] | 43 [0; 964] | 97 [0; 1,158] | 0.4 [0.0; 4.6] |
| Armenia (Caucasus and central Asia) | 0 [0; 1] | 0 [0; 0] | 0 [0; 0] | 5 [1; 12] | 0 [0; 3] | 5 [1; 15] | 0.0 [0.0; 0.1] |
| Azerbaijan (Caucasus and central Asia) | 2 [0; 6] | 0 [0; 0] | 0 [0; 1] | 31 [2; 72] | 2 [0; 32] | 33 [2; 99] | 0.1 [0.0; 0.5] |
| Georgia (Caucasus and central Asia) | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 2] | 0 [0; 0] | 0 [0; 2] | 0.0 [0.0; 0.0] |
| Tajikistan* (Caucasus and central Asia) | 0 [0; 5] | 3 [0; 8] | 2 [0; 7] | 0 [0; 64] | 178 [2; 559] | 178 [3; 564] | 0.8 [0.0; 2.5] |
| Singapore* (southeastern Asia) | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 2] | 0 [0; 1] | 0 [0; 3] | 0.0 [0.0; 0.0] |
| Vietnam (southeastern Asia) | 28 [0; 75] | 1 [0; 12] | 5 [0; 21] | 360 [0; 970] | 72 [0; 874] | 432 [0; 1,757] | 1.9 [0.0; 7.6] |

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**Table 5 – continued from previous page**

| Country (Region) | Scenario S2 | | | | | | |
|---|---|---|---|---|---|---|---|
| | AMFB (in ,000) | | | CMFB (in ,000) | | | % to total CMFB |
| | 2018–2030 | 2031–2100 | 2018–2100 | 2018–2030 | 2031–2100 | 2018–2100 | 2018–2100 |
| China (eastern Asia) | 283 [0; 753] | 5 [0; 72] | 48 [0; 170] | 3,682 [0; 9,783] | 342 [0; 5,042] | 4,024 [0; 14,106] | 17.4 [0.0; 44.6] |
| Hong Kong, SAR of China (eastern Asia) | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0.0 [0.0; 0.0] |
| Republic of Korea (eastern Asia) | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0 [0; 0] | 0.0 [0.0; 0.0] |
| Taiwan, Province of China (eastern Asia) | 0 [0; 1] | 0 [0; 0] | 0 [0; 0] | 4 [0; 18] | 0 [0; 4] | 5 [0; 22] | 0.0 [0.0; 0.1] |

# 3 Supplementary Figures

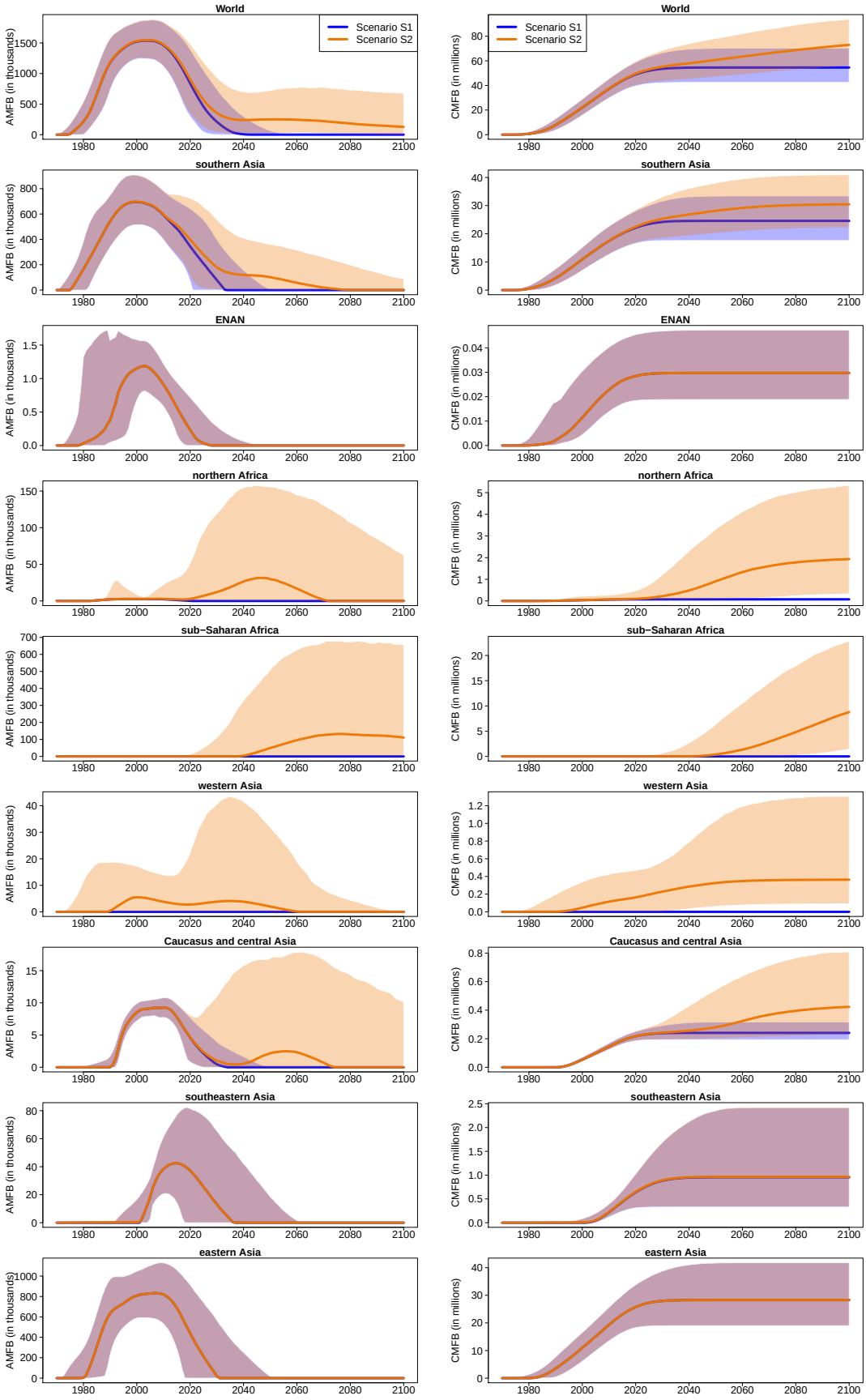
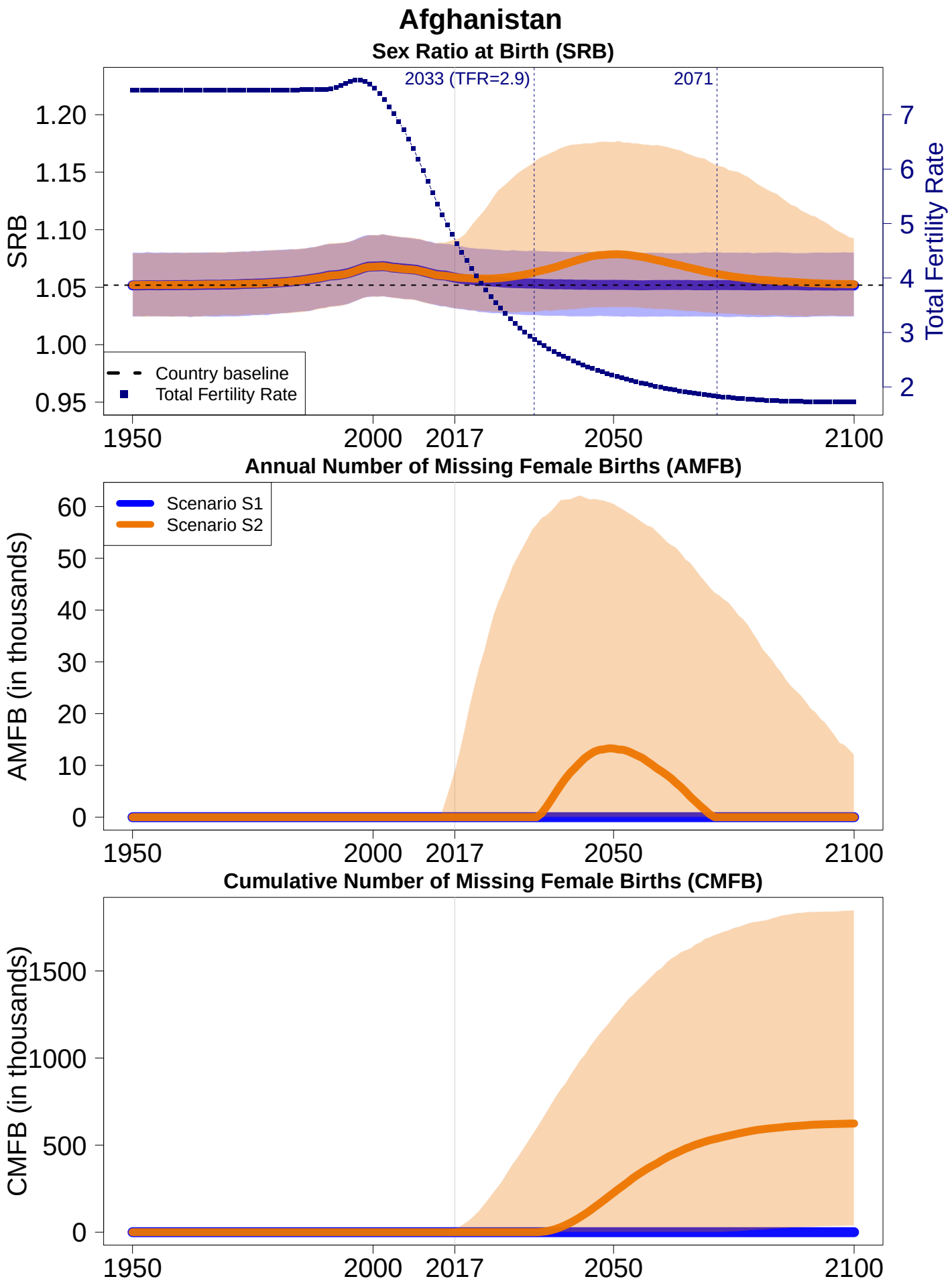


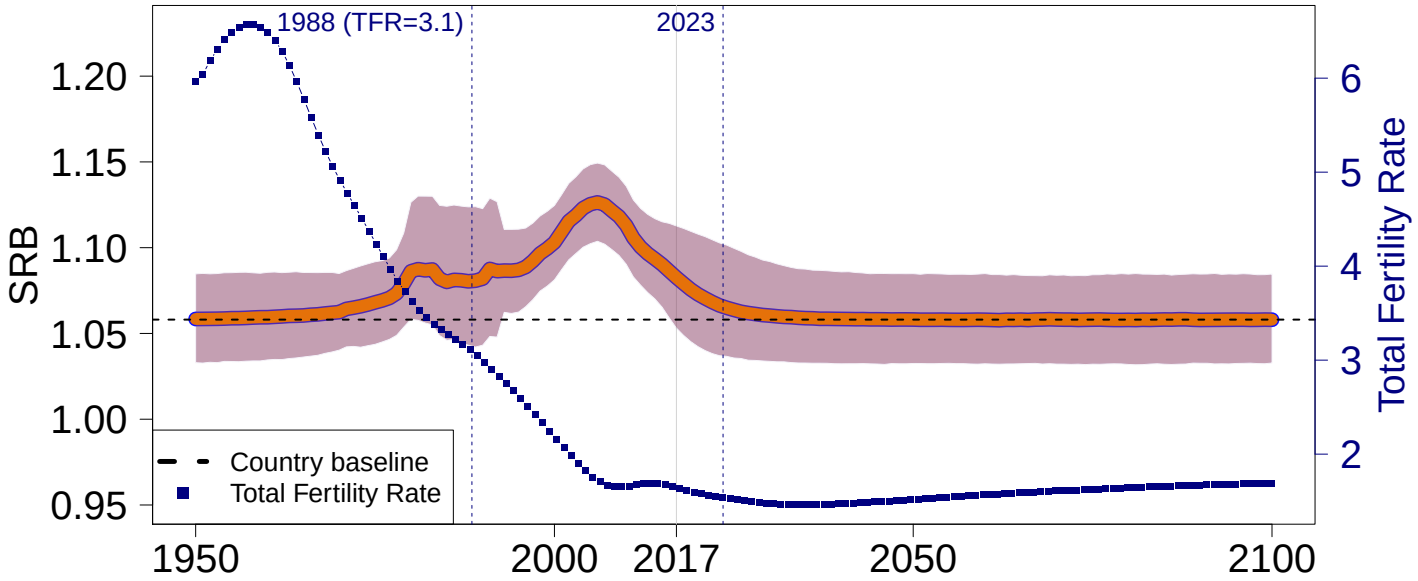

Figure 1: **AMFB (left) and CMFB (right) scenario-based projections during 1970–2100 for the world and region with projected SRB inflation.** The solid lines are medians and shaded areas represent 95% uncertainty intervals.

Figure 2: **Scenario-based projection results during 1950–2100, by country.** Top: sex ratio at birth (SRB) estimates and projections. Middle: annual number of missing female births (AMFB) estimates and projections. Bottom: cumulative number of missing female births (CMFB) estimates and projections. Blue curves and shades are median estimates/projections and 95% uncertainty intervals for Scenario S1. Orange curves and shades are median estimates/projections and 95% uncertainty intervals for Scenario S2. In SRB plots, black horizontal dashed lines are the country-specific baselines (median estimates). Blue squared dots are the median estimates and projections of total fertility rate (TFR) from the UN WPP 2019 [3]. Blue vertical dashed lines are the median estimates of start and end years of the sex ratio transition (if before 2100).

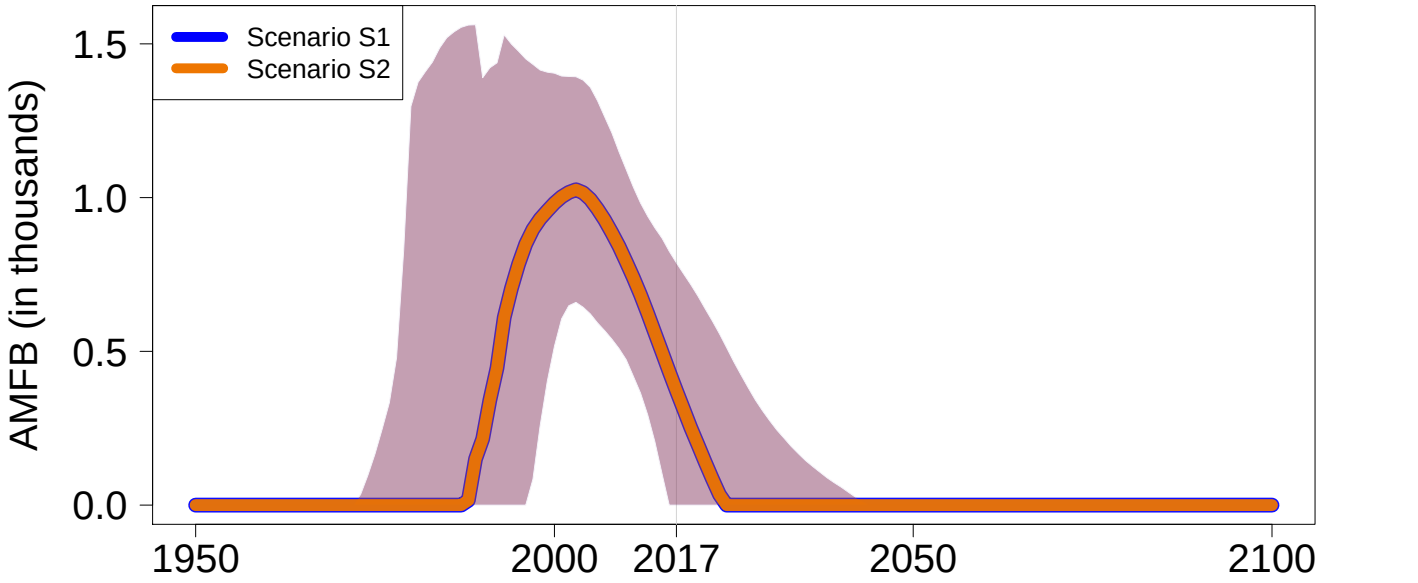

Afghanistan
Sex Ratio at Birth (SRB)
2033 (TFR=2.9)
2071
SRB
Total Fertility Rate
1.20
1.15
1.10
1.05
1.00
0.95
7
6
5
4
3
2
Country baseline
Total Fertility Rate
1950
2000
2017
2050
2100
Annual Number of Missing Female Births (AMFB)
AMFB (in thousands)
60
50
40
30
20
10
0
Scenario S1
Scenario S2
Cumulative Number of Missing Female Births (CMFB)
CMFB (in thousands)
1500
1000
500
0

# Albania

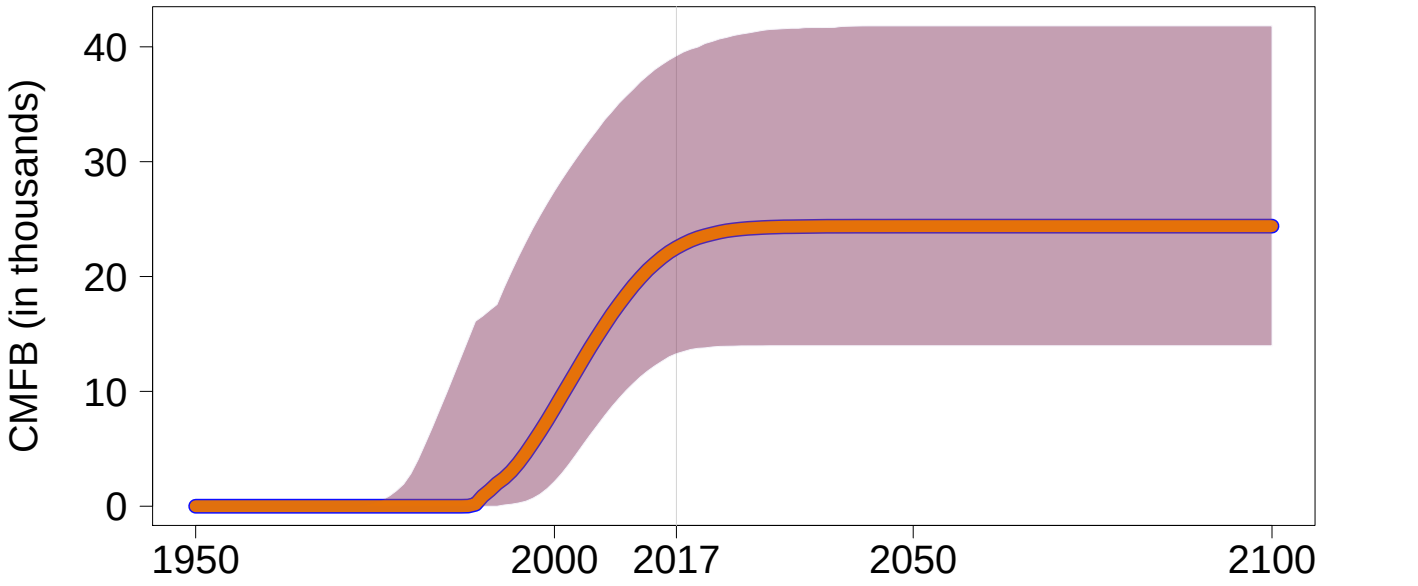
## Sex Ratio at Birth (SRB)

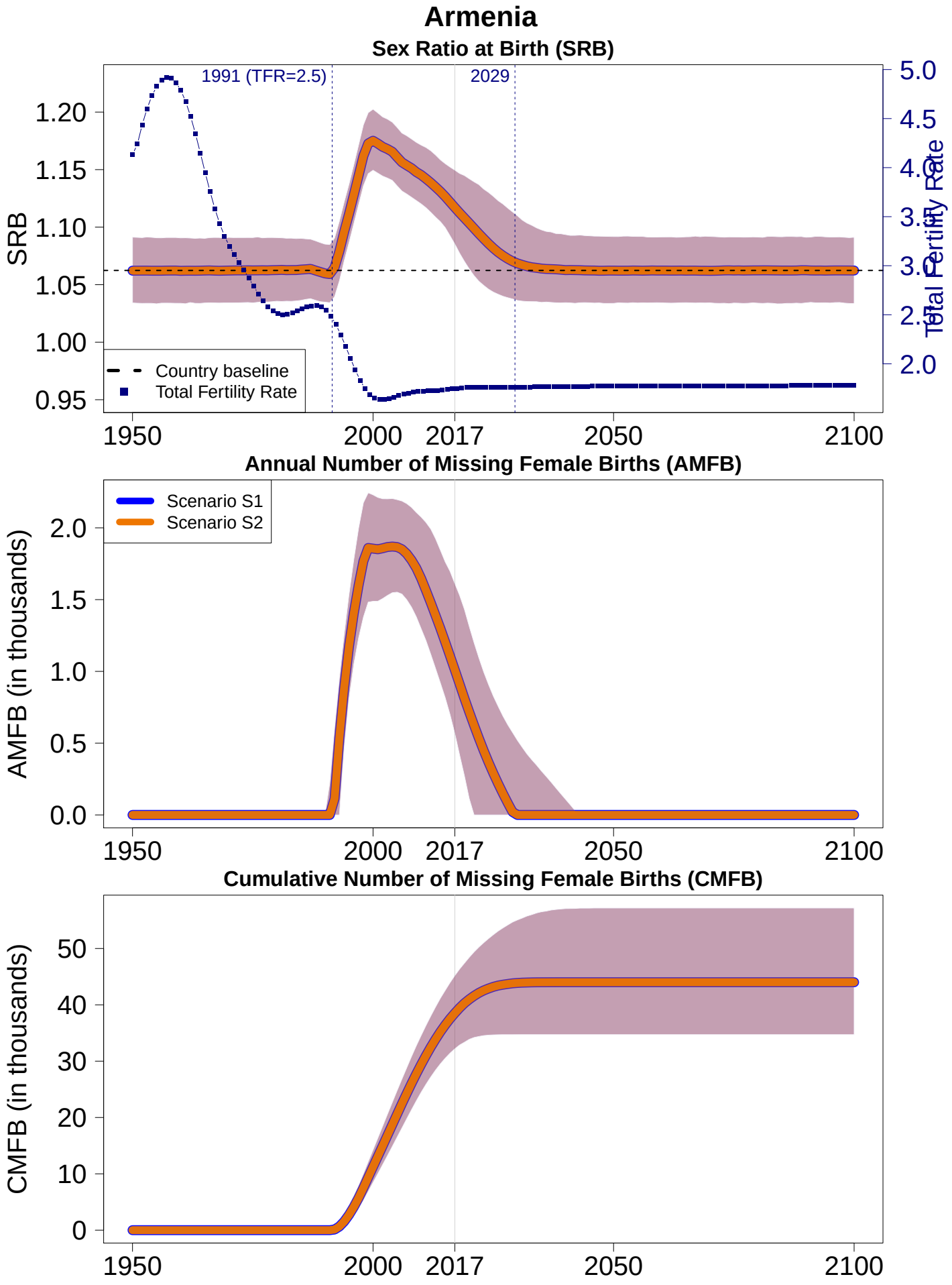


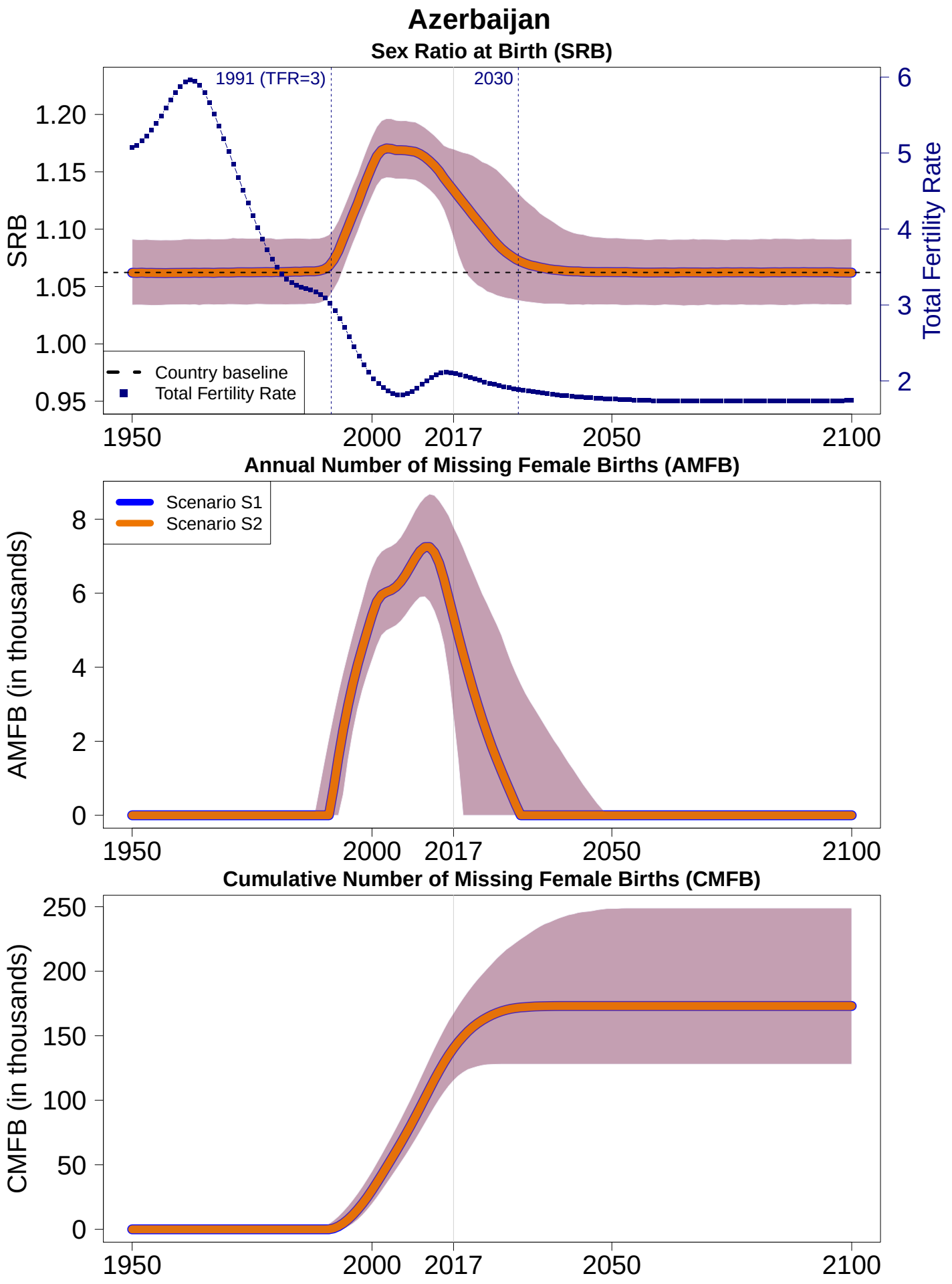

## Annual Number of Missing Female Births (AMFB)

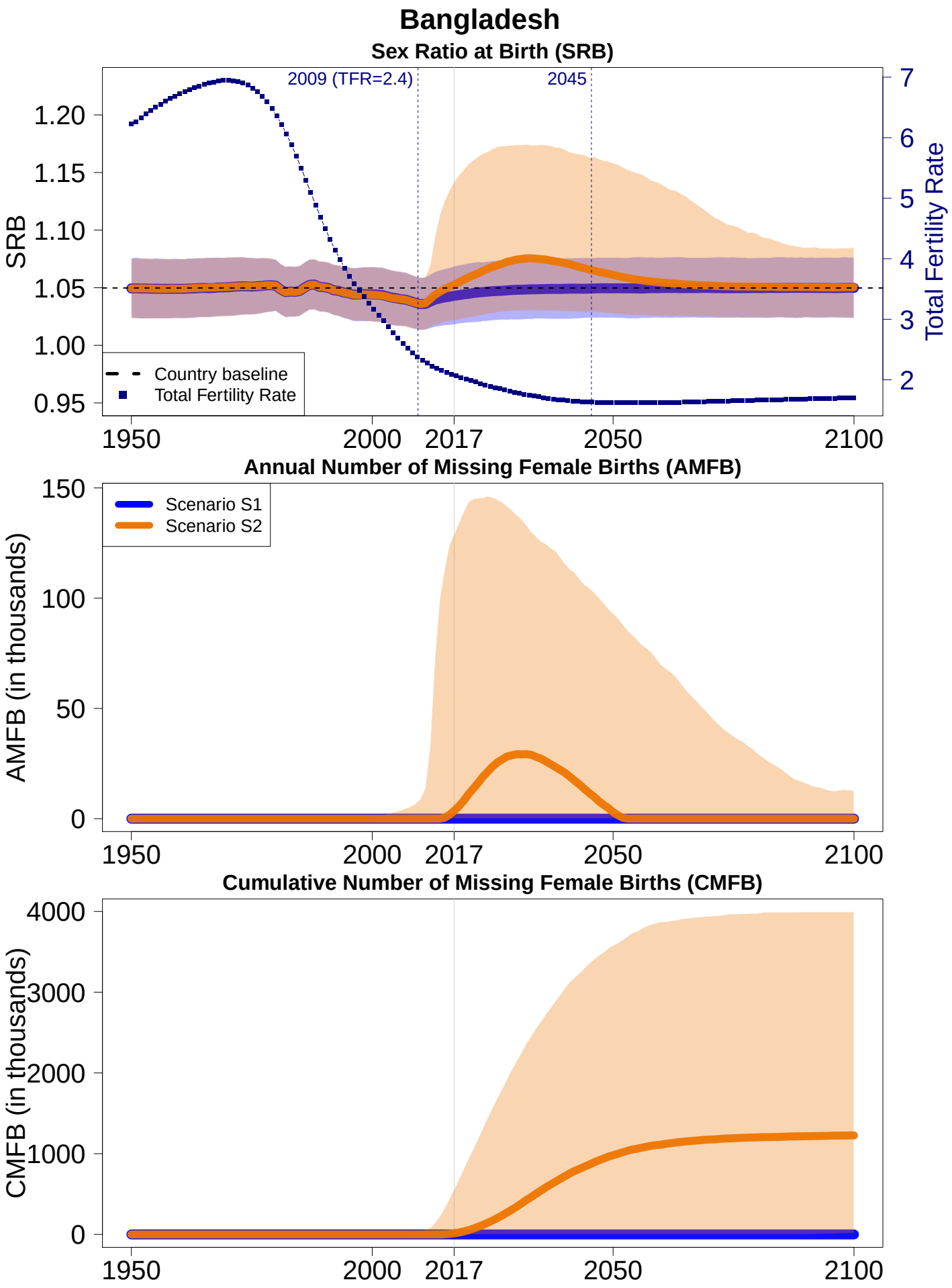


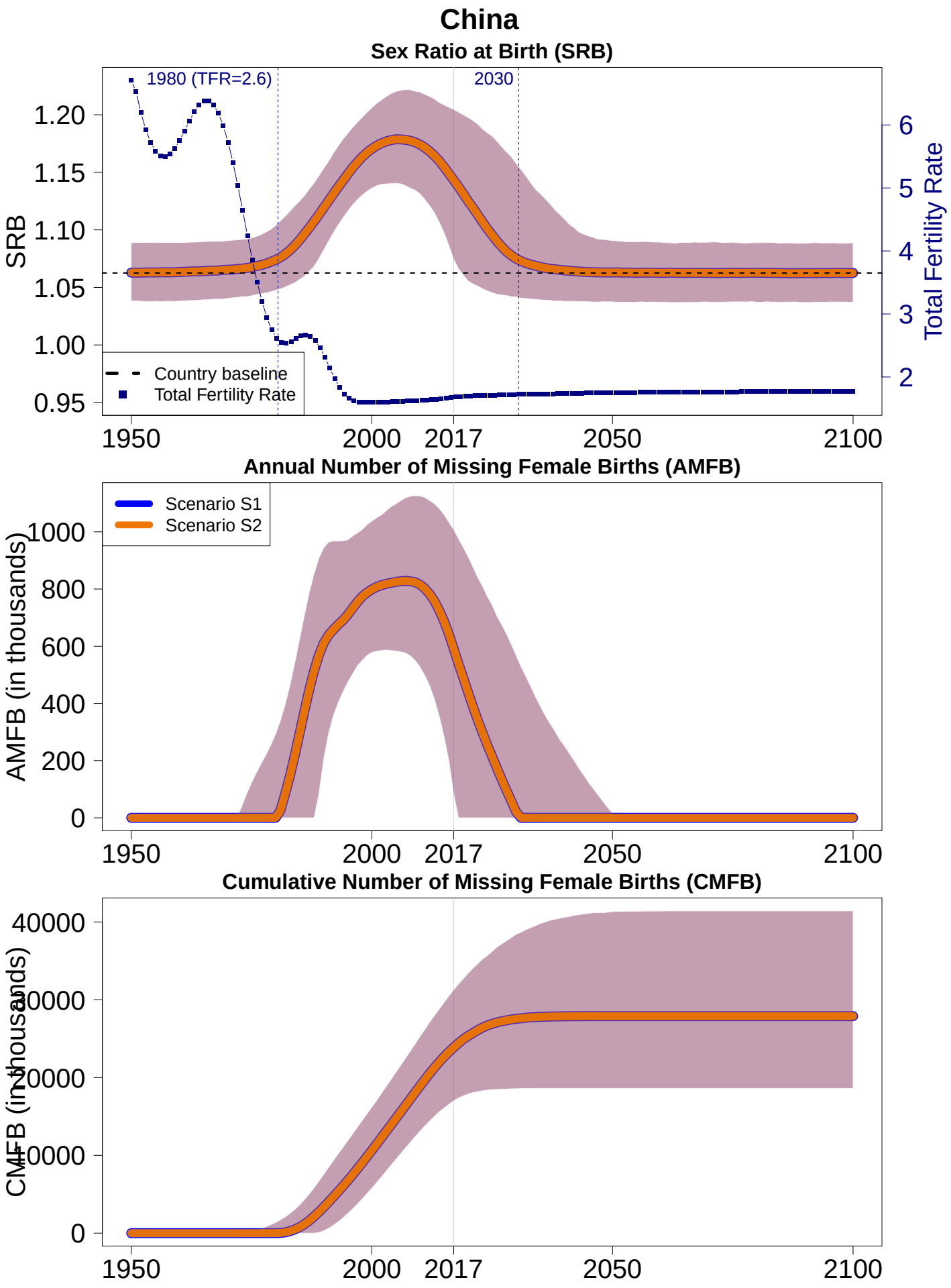

## Cumulative Number of Missing Female Births (CMFB)

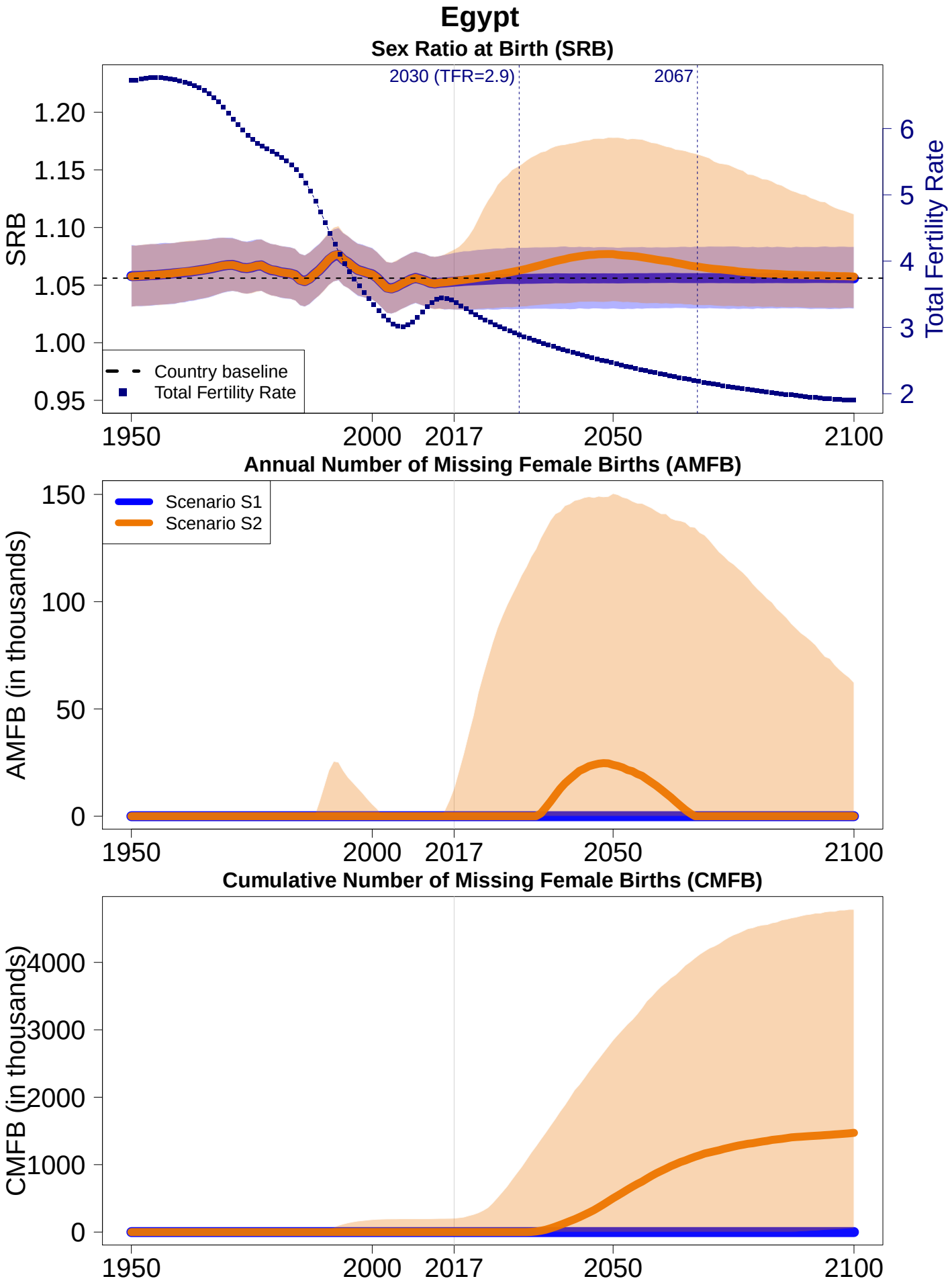


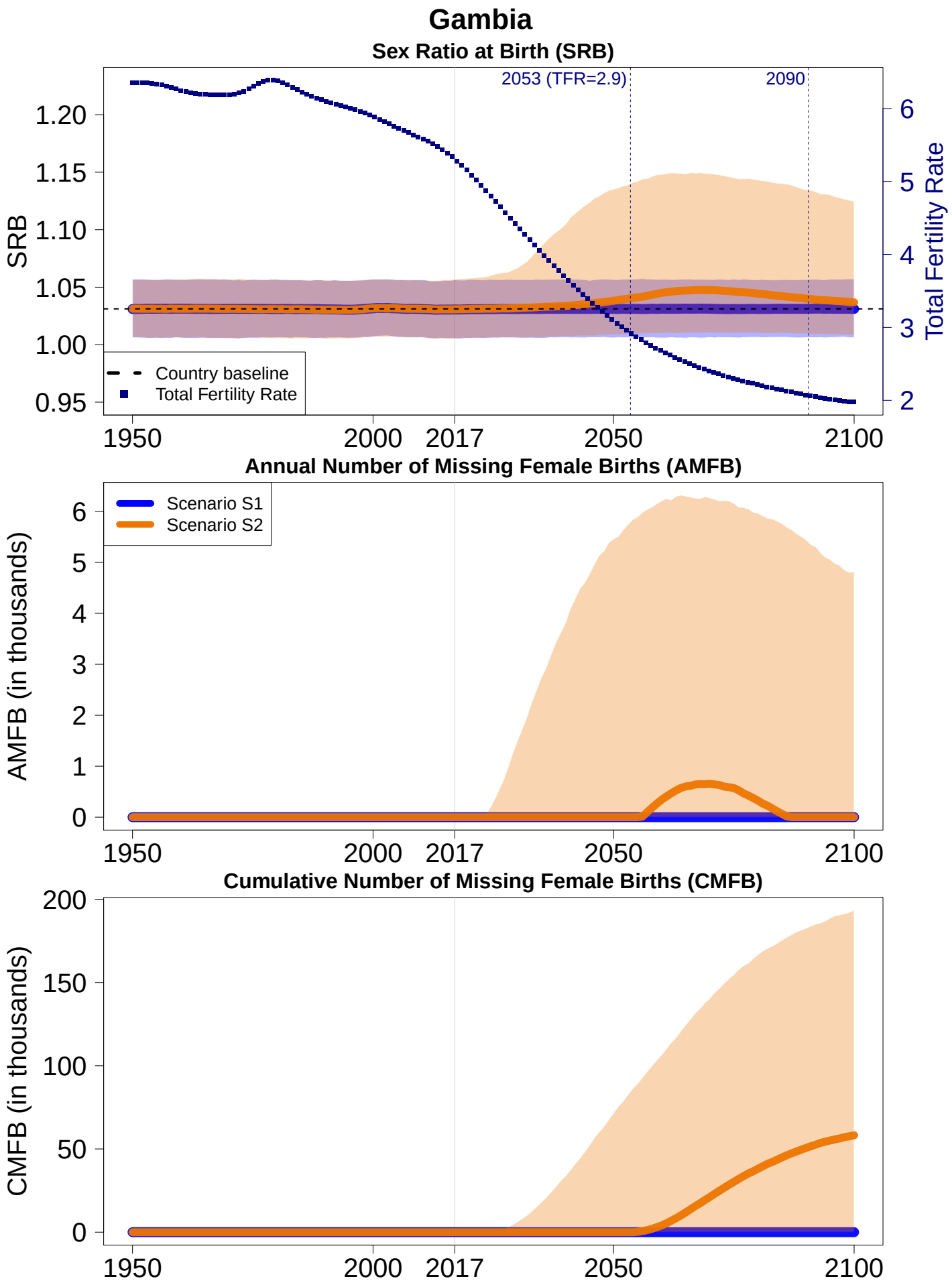

Armenia
Sex Ratio at Birth (SRB)
1991 (TFR=2.5)
2029
SRB
Total Fertility Rate
Country baseline
Total Fertility Rate
1950
2000
2017
2050
2100
Annual Number of Missing Female Births (AMFB)
Scenario S1
Scenario S2
AMFB (in thousands)
Cumulative Number of Missing Female Births (CMFB)
CMFB (in thousands)


Azerbaijan
Sex Ratio at Birth (SRB)
1991 (TFR=3)
2030
SRB
Total Fertility Rate
Country baseline
Total Fertility Rate
1950
2000
2017
2050
2100
Annual Number of Missing Female Births (AMFB)
Scenario S1
Scenario S2
AMFB (in thousands)
Cumulative Number of Missing Female Births (CMFB)
CMFB (in thousands)

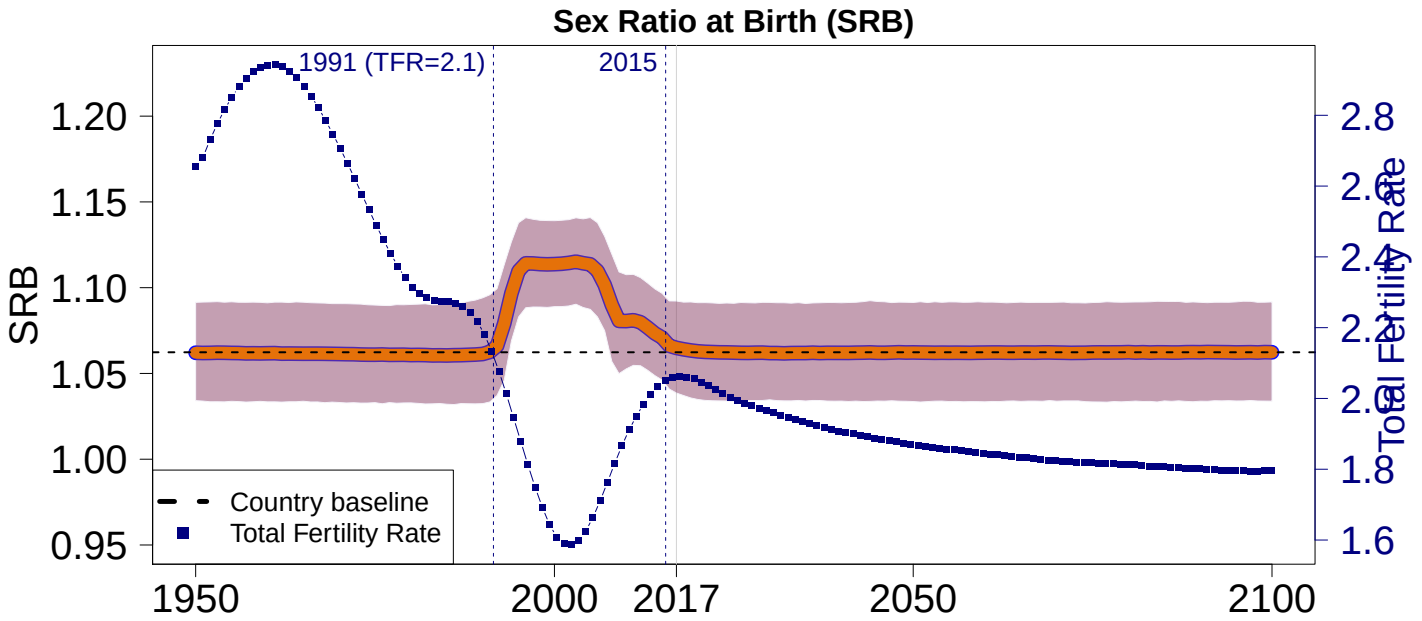

Bangladesh
Sex Ratio at Birth (SRB)
2009 (TFR=2.4)
2045
SRB
Total Fertility Rate
Country baseline
Total Fertility Rate
1950
2000
2017
2050
2100
Annual Number of Missing Female Births (AMFB)
AMFB (in thousands)
Scenario S1
Scenario S2
Cumulative Number of Missing Female Births (CMFB)
CMFB (in thousands)

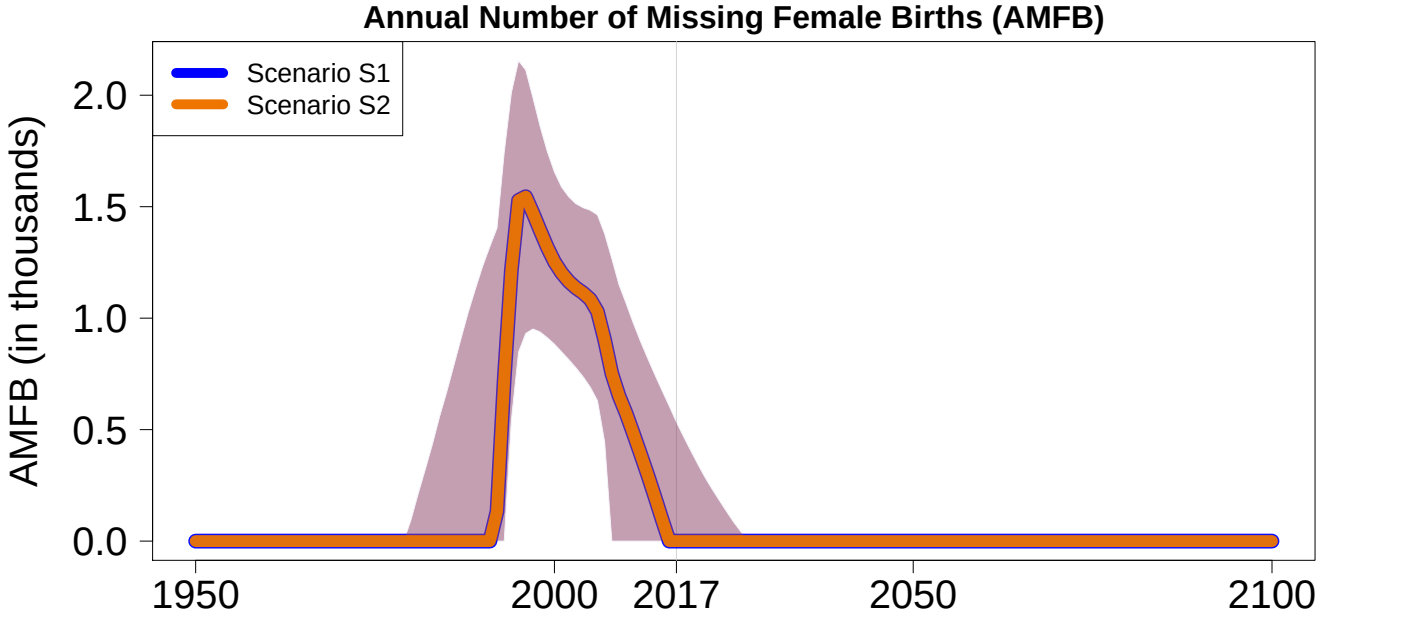

China
Sex Ratio at Birth (SRB)
1980 (TFR=2.6)
2030
SRB
Total Fertility Rate
Country baseline
Total Fertility Rate
1.20
1.15
1.10
1.05
1.00
0.95
6
5
4
3
2
1950
2000
2017
2050
2100
Annual Number of Missing Female Births (AMFB)
Scenario S1
Scenario S2
AMFB (in thousands)
1000
800
600
400
200
0
Cumulative Number of Missing Female Births (CMFB)
CMFB (in thousands)
40000
30000
20000
10000
0

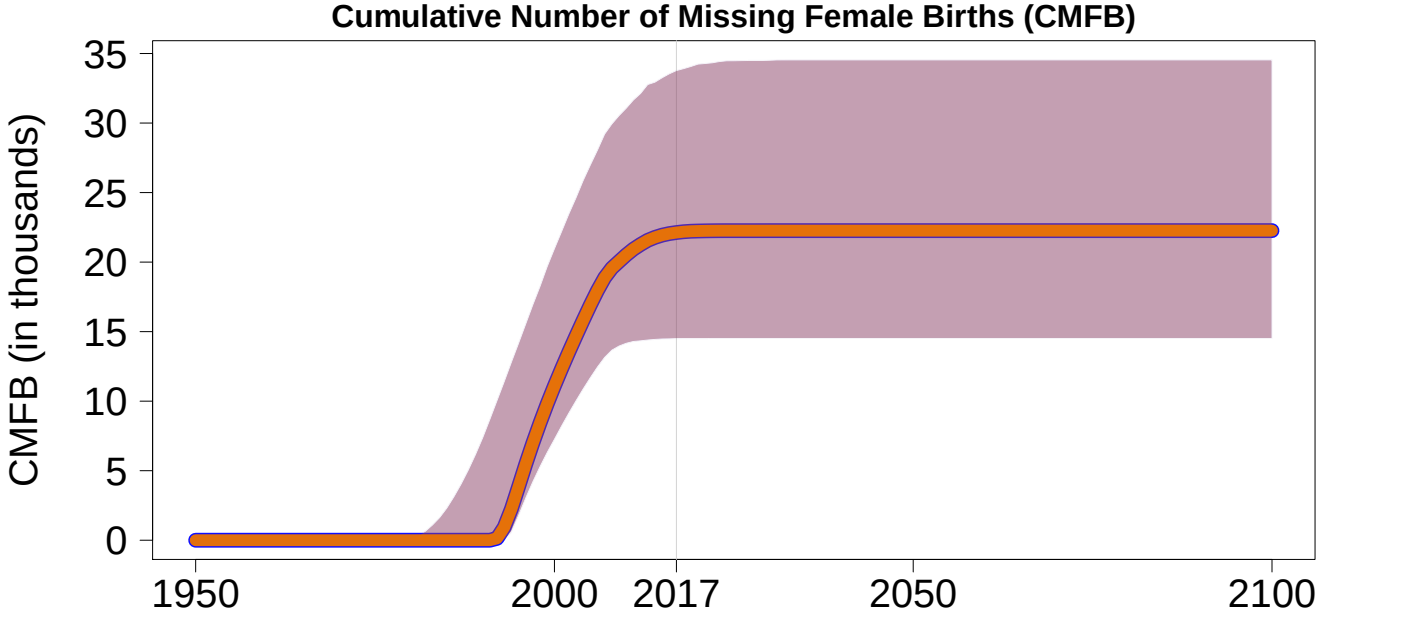

Egypt
Sex Ratio at Birth (SRB)
2030 (TFR=2.9)
2067
SRB
Total Fertility Rate
Country baseline
Total Fertility Rate
1.20
1.15
1.10
1.05
1.00
0.95
6
5
4
3
2
1950
2000
2017
2050
2100
Annual Number of Missing Female Births (AMFB)
AMFB (in thousands)
Scenario S1
Scenario S2
150
100
50
0
Cumulative Number of Missing Female Births (CMFB)
CMFB (in thousands)
4000
3000
2000
1000
0

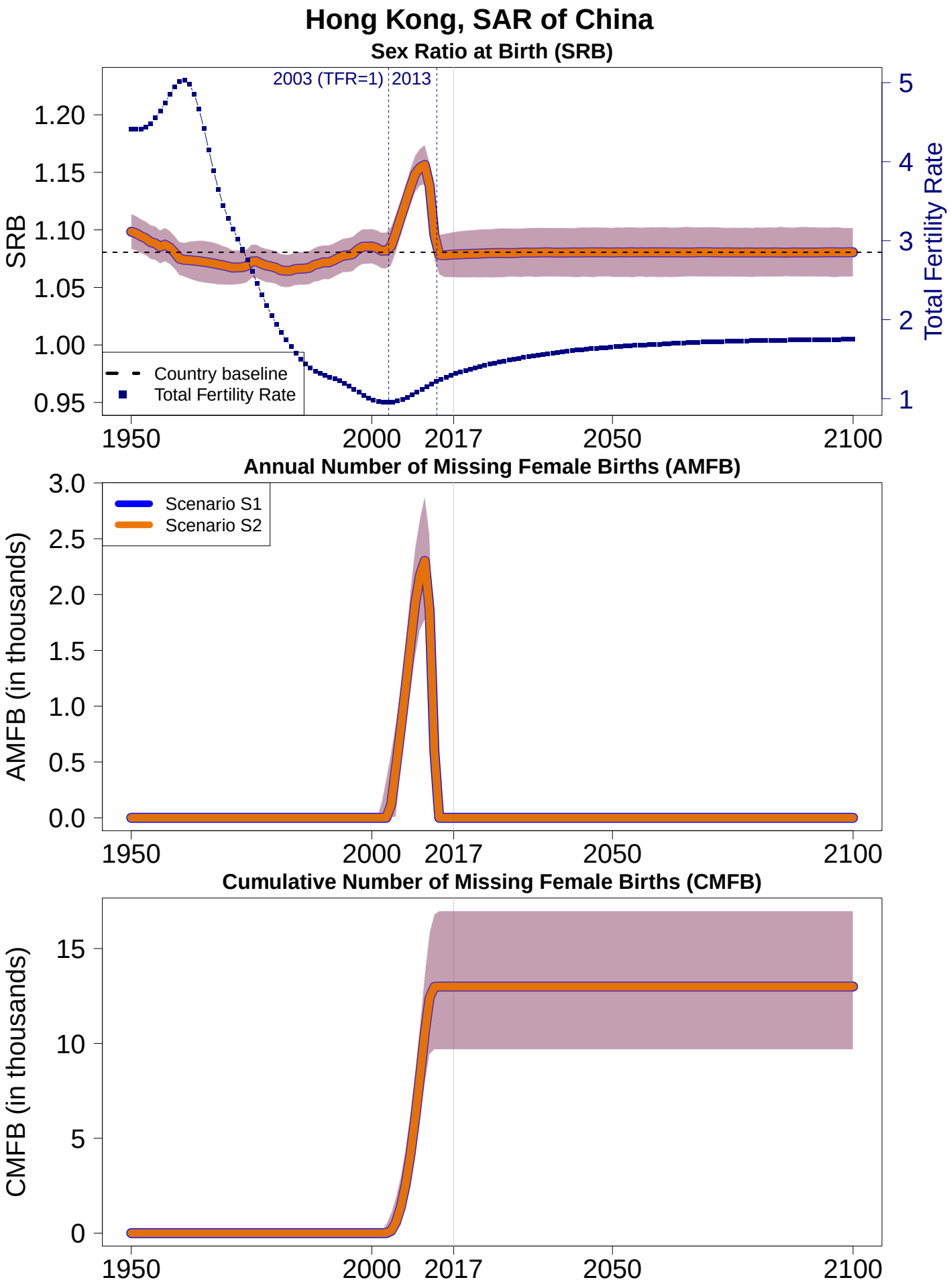

Gambia
Sex Ratio at Birth (SRB)
2053 (TFR=2.9)
2090
SRB
Total Fertility Rate
Country baseline
Total Fertility Rate
1.20
1.15
1.10
1.05
1.00
0.95
6
5
4
3
2
1950
2000
2017
2050
2100
Annual Number of Missing Female Births (AMFB)
AMFB (in thousands)
Scenario S1
Scenario S2
6
5
4
3
2
1
0
Cumulative Number of Missing Female Births (CMFB)
CMFB (in thousands)
200
150
100
50
0

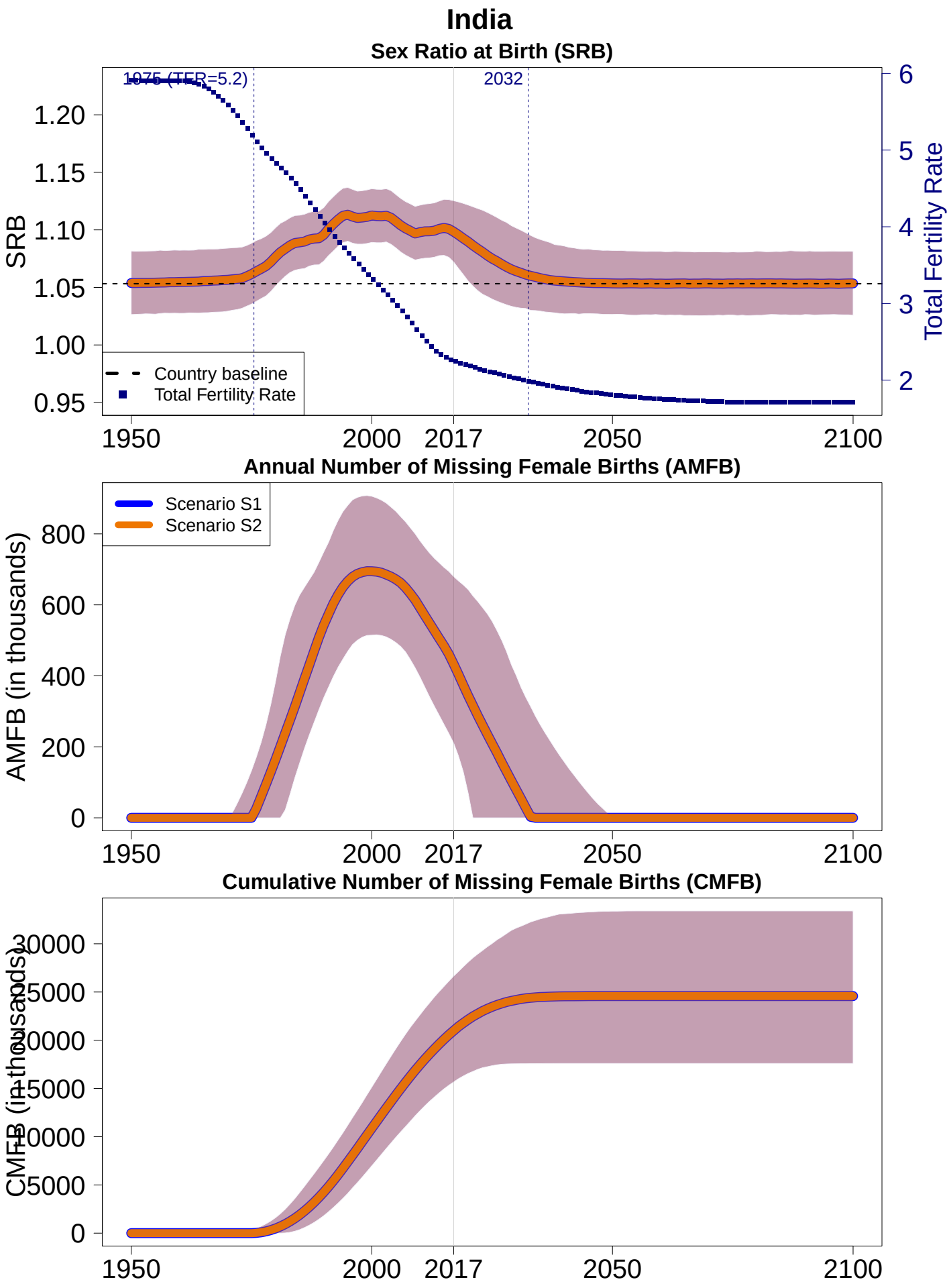
# Georgia

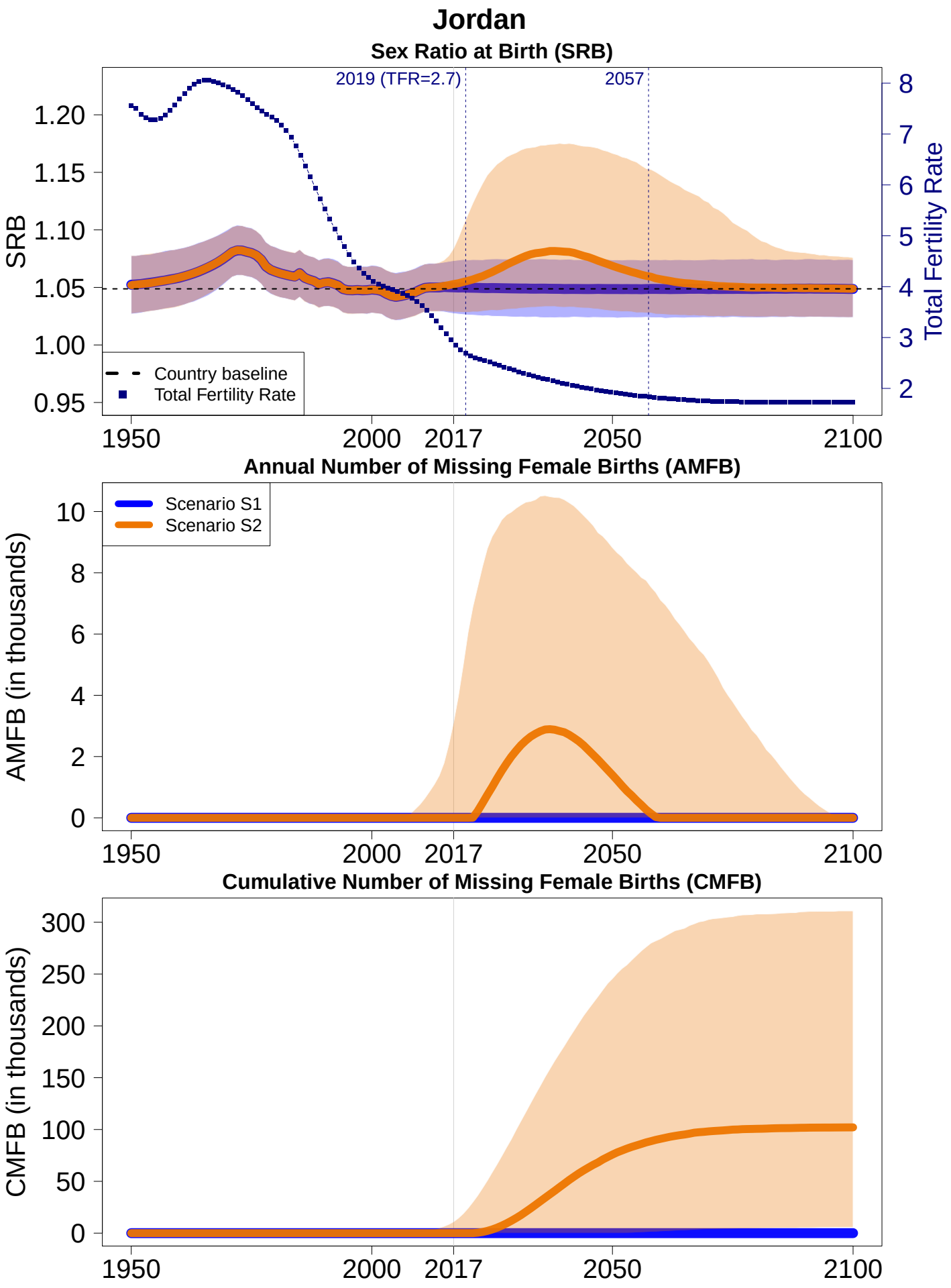

Sex Ratio at Birth (SRB)
1991 (TFR=2.1)
2015
SRB
Total Fertility Rate
1.20
1.15
1.10
1.05
1.00
0.95
2.8
2.6
2.4
2.2
2.0
1.8
1.6
Country baseline
Total Fertility Rate
1950
2000
2017
2050
2100

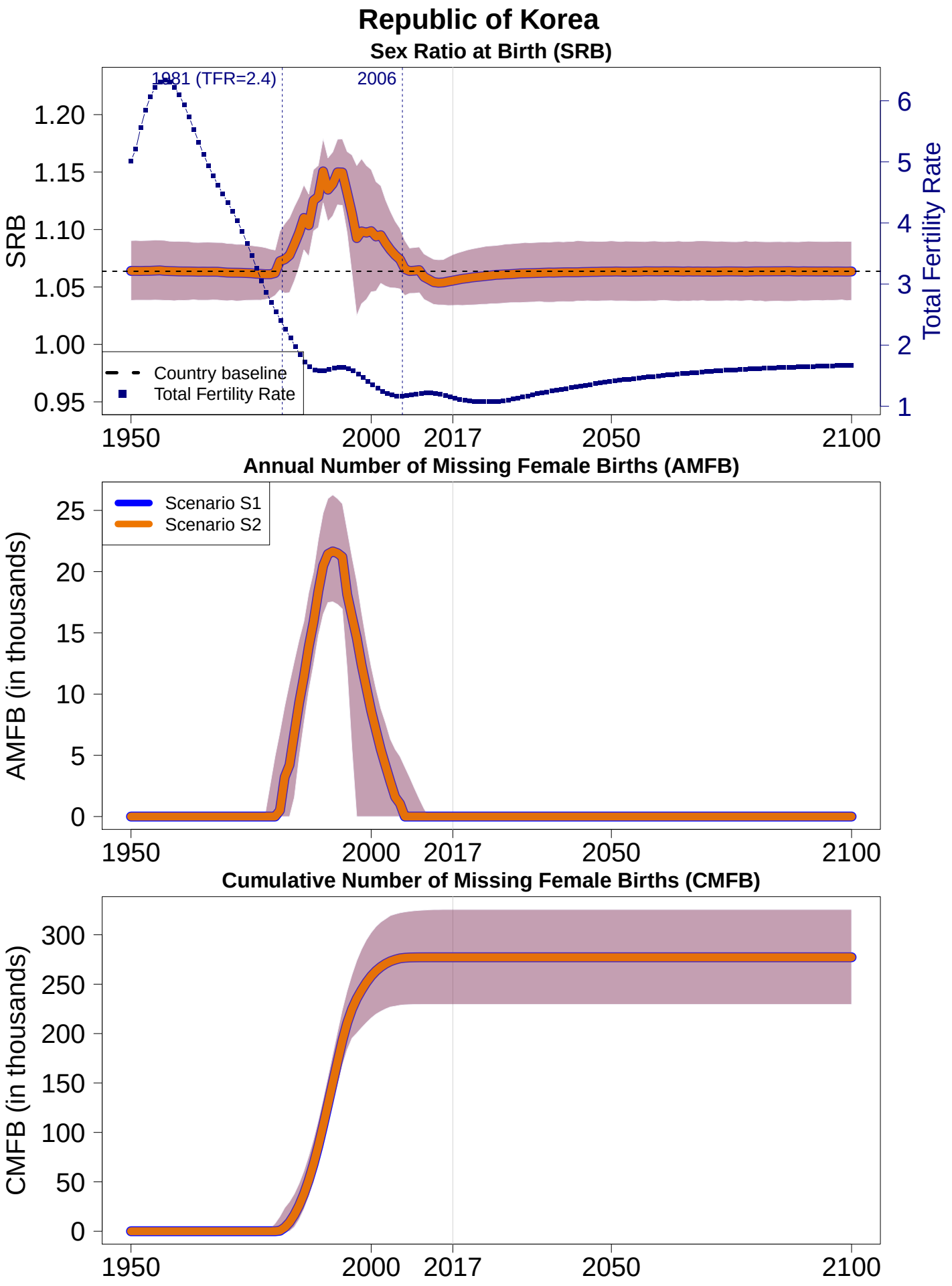

Annual Number of Missing Female Births (AMFB)
AMFB (in thousands)
Scenario S1
Scenario S2
2.0
1.5
1.0
0.5
0.0
1950
2000
2017
2050
2100


Cumulative Number of Missing Female Births (CMFB)
CMFB (in thousands)
35
30
25
20
15
10
5
0
1950
2000
2017
2050
2100

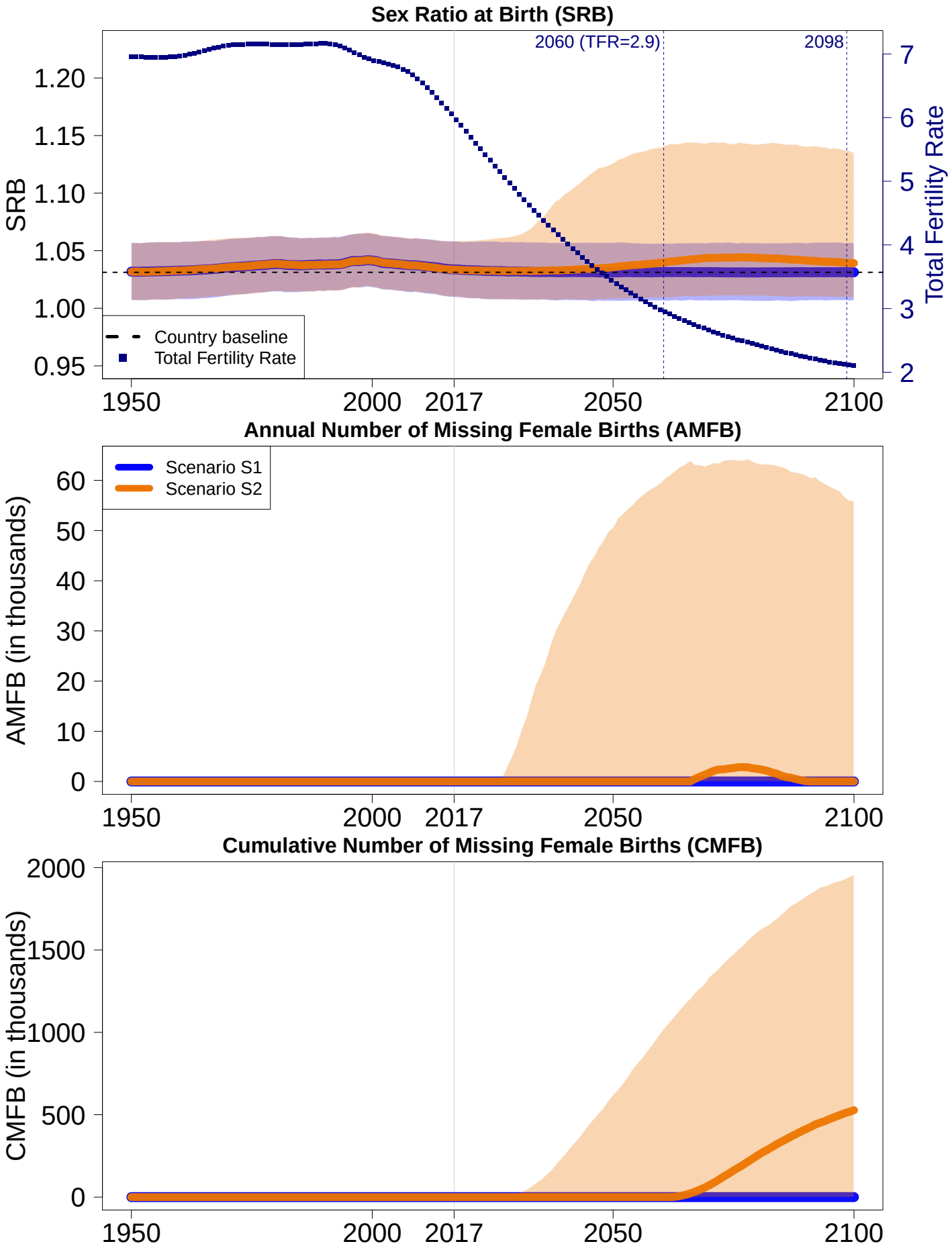

Hong Kong, SAR of China
Sex Ratio at Birth (SRB)
2003 (TFR=1)
2013
SRB
Total Fertility Rate
Country baseline
Total Fertility Rate
1950
2000
2017
2050
2100
Annual Number of Missing Female Births (AMFB)
Scenario S1
Scenario S2
AMFB (in thousands)
Cumulative Number of Missing Female Births (CMFB)
CMFB (in thousands)


India
Sex Ratio at Birth (SRB)
1975 (TFR=5.2)
2032
SRB
Total Fertility Rate
Country baseline
Total Fertility Rate
1.20
1.15
1.10
1.05
1.00
0.95
6
5
4
3
2
1950
2000
2017
2050
2100
Annual Number of Missing Female Births (AMFB)
Scenario S1
Scenario S2
AMFB (in thousands)
800
600
400
200
0
Cumulative Number of Missing Female Births (CMFB)
CMFB (in thousands)
30000
25000
20000
15000
10000
5000
0

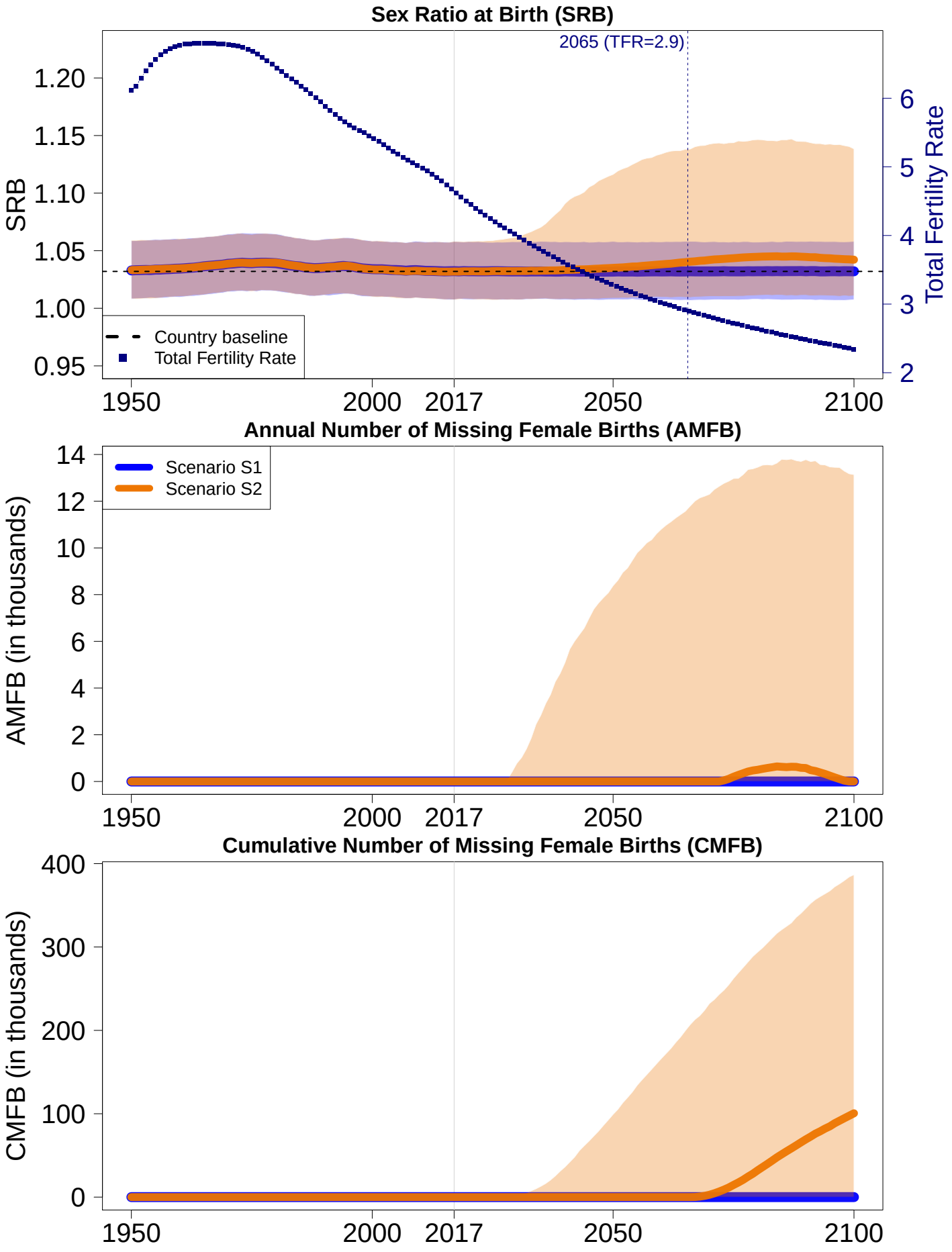

Jordan
Sex Ratio at Birth (SRB)
2019 (TFR=2.7)
2057
SRB
Total Fertility Rate
Country baseline
Total Fertility Rate
1950
2000
2017
2050
2100
Annual Number of Missing Female Births (AMFB)
Scenario S1
Scenario S2
AMFB (in thousands)
Cumulative Number of Missing Female Births (CMFB)
CMFB (in thousands)

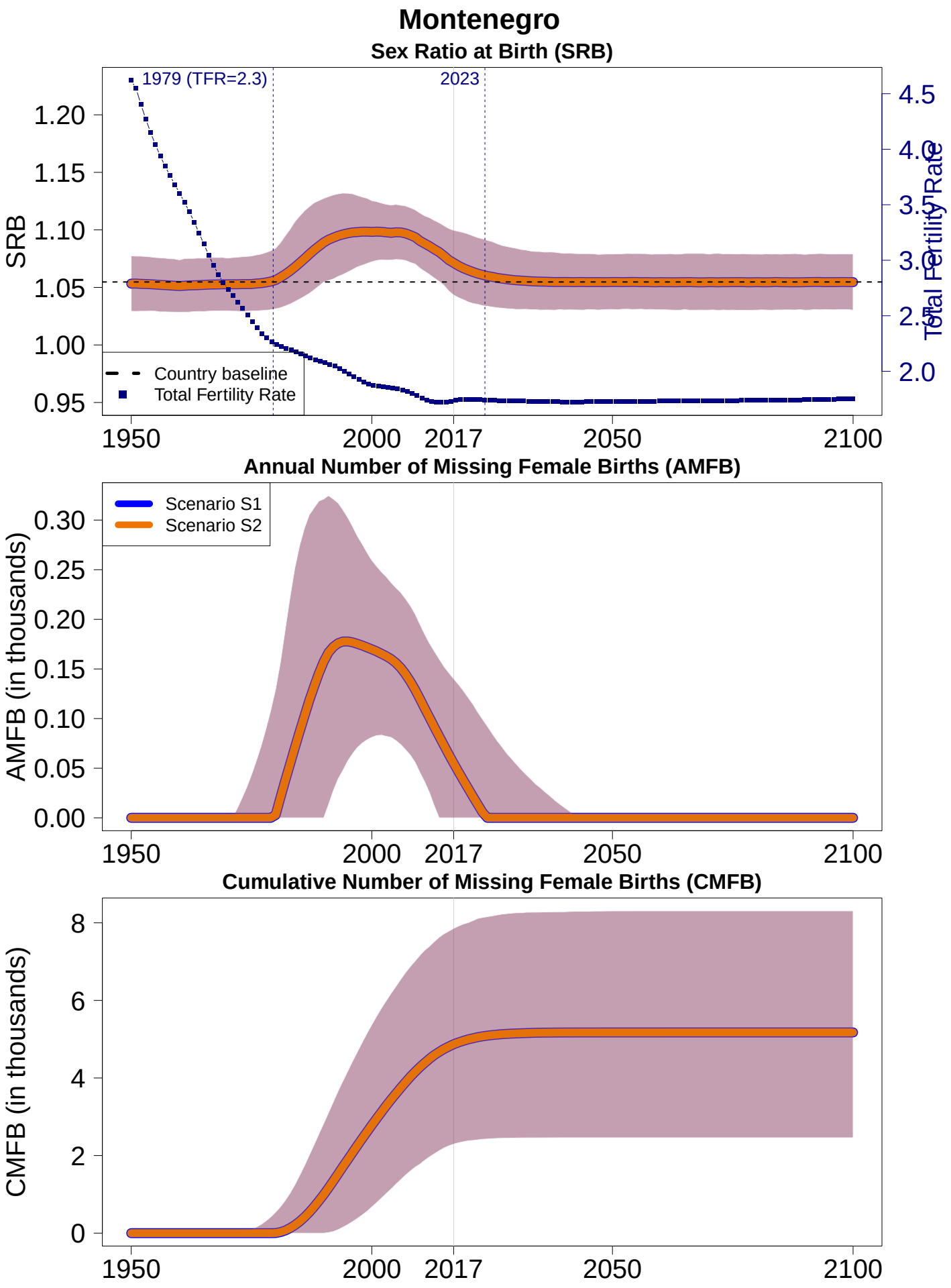

Republic of Korea
Sex Ratio at Birth (SRB)
1981 (TFR=2.4)
2006
SRB
Total Fertility Rate
Country baseline
Total Fertility Rate
1950
2000
2017
2050
2100
Annual Number of Missing Female Births (AMFB)
Scenario S1
Scenario S2
AMFB (in thousands)
Cumulative Number of Missing Female Births (CMFB)
CMFB (in thousands)

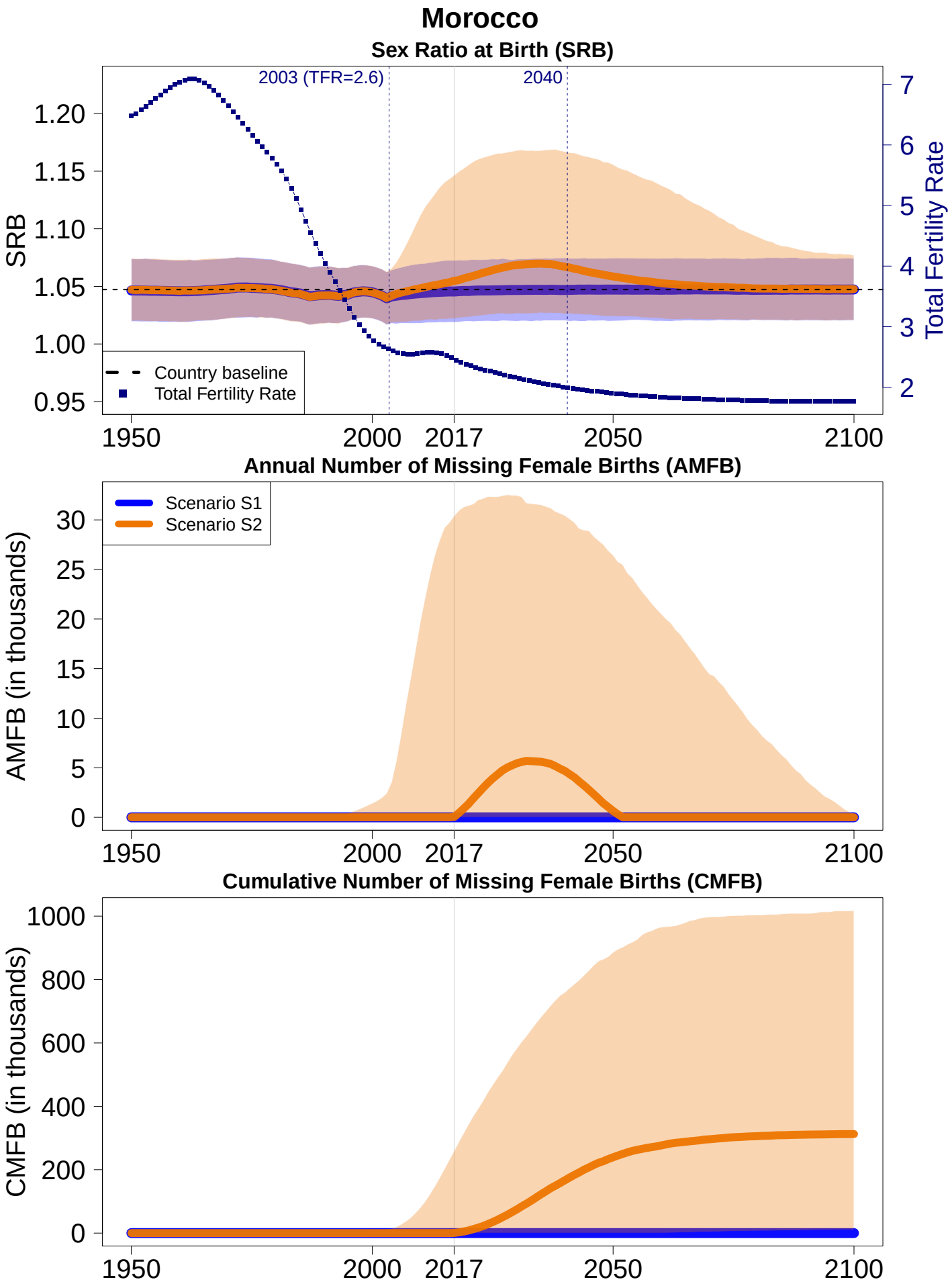
# Mali

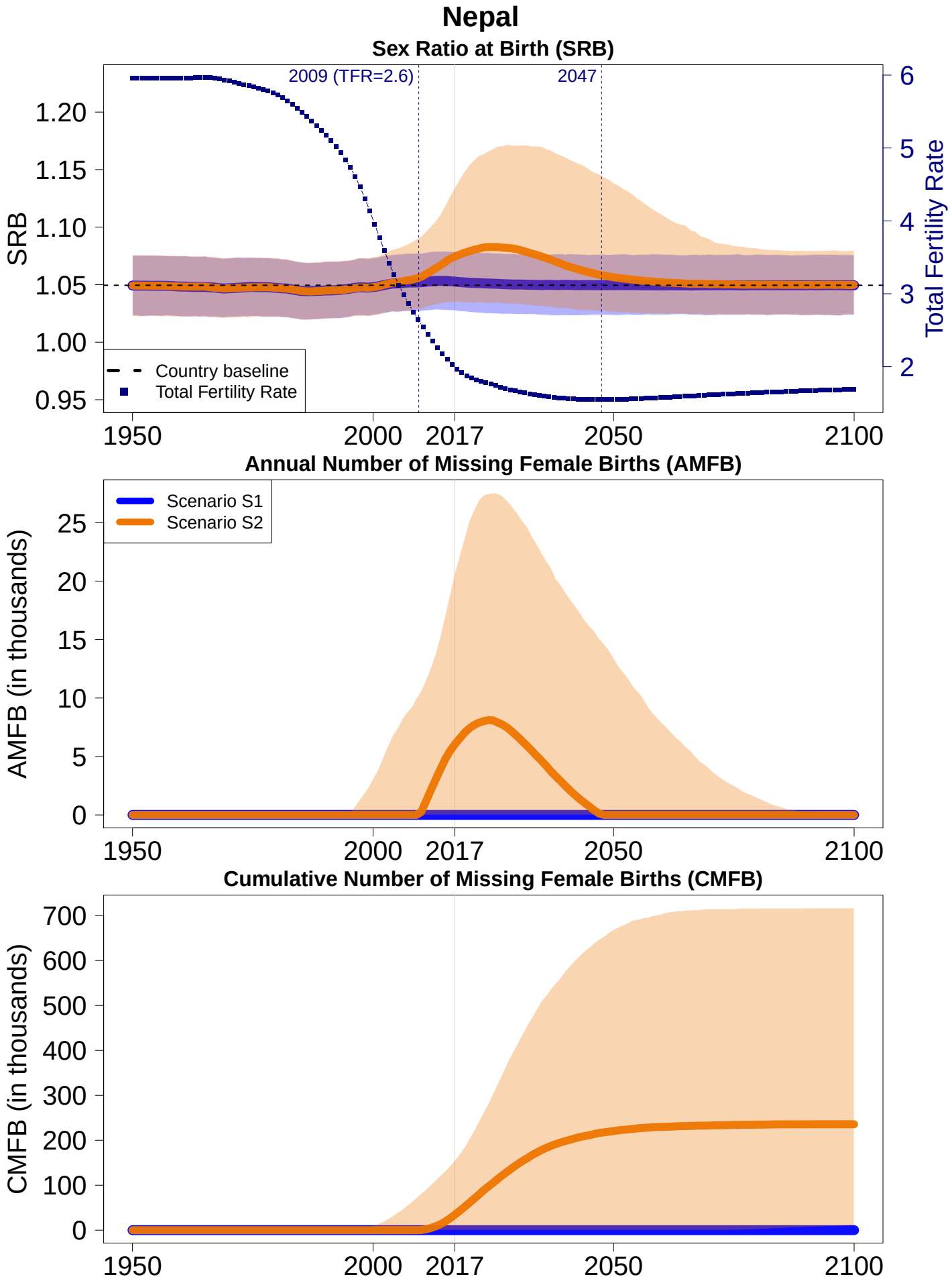

Sex Ratio at Birth (SRB)
2060 (TFR=2.9)
2098
SRB
Total Fertility Rate
1.20
1.15
1.10
1.05
1.00
0.95
7
6
5
4
3
2
Country baseline
Total Fertility Rate
1950
2000
2017
2050
2100
Annual Number of Missing Female Births (AMFB)
AMFB (in thousands)
Scenario S1
Scenario S2
60
50
40
30
20
10
0
Cumulative Number of Missing Female Births (CMFB)
CMFB (in thousands)
2000
1500
1000
500
0

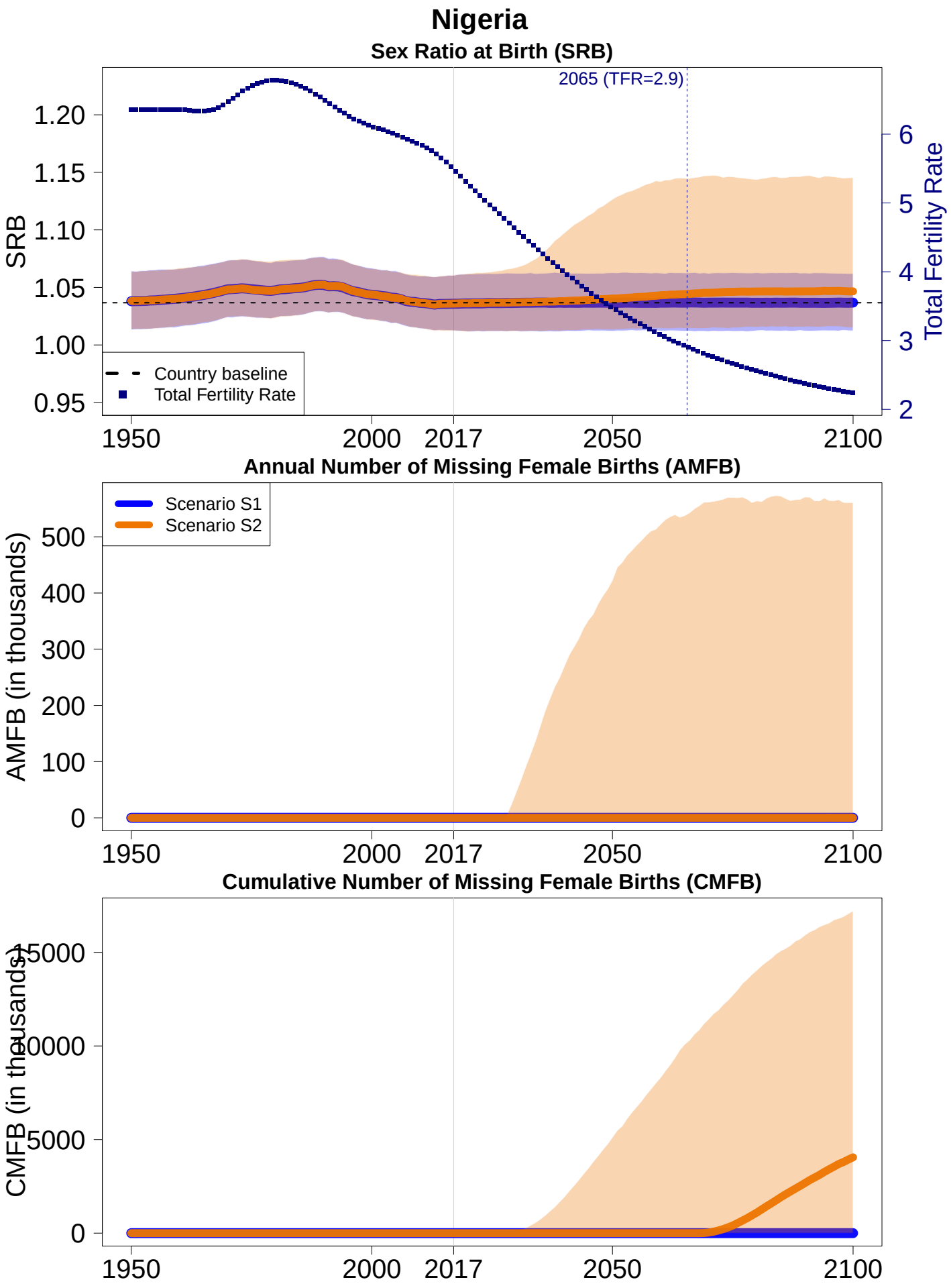
# Mauritania

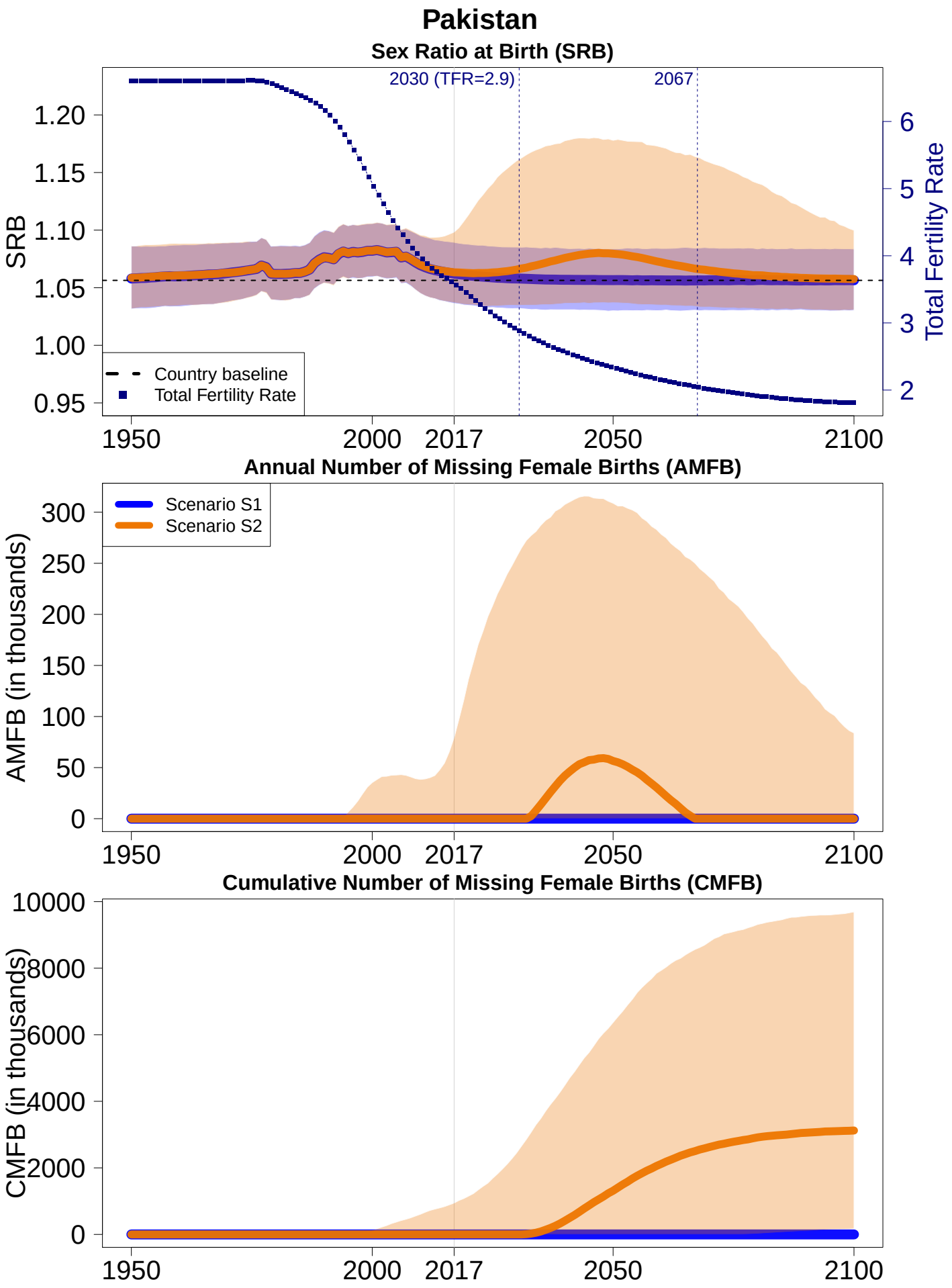

Sex Ratio at Birth (SRB)
2065 (TFR=2.9)
SRB
Total Fertility Rate
1.20
1.15
1.10
1.05
1.00
0.95
6
5
4
3
2
Country baseline
Total Fertility Rate
1950
2000
2017
2050
2100
Annual Number of Missing Female Births (AMFB)
AMFB (in thousands)
14
12
10
8
6
4
2
0
Scenario S1
Scenario S2
1950
2000
2017
2050
2100
Cumulative Number of Missing Female Births (CMFB)
CMFB (in thousands)
400
300
200
100
0
1950
2000
2017
2050
2100

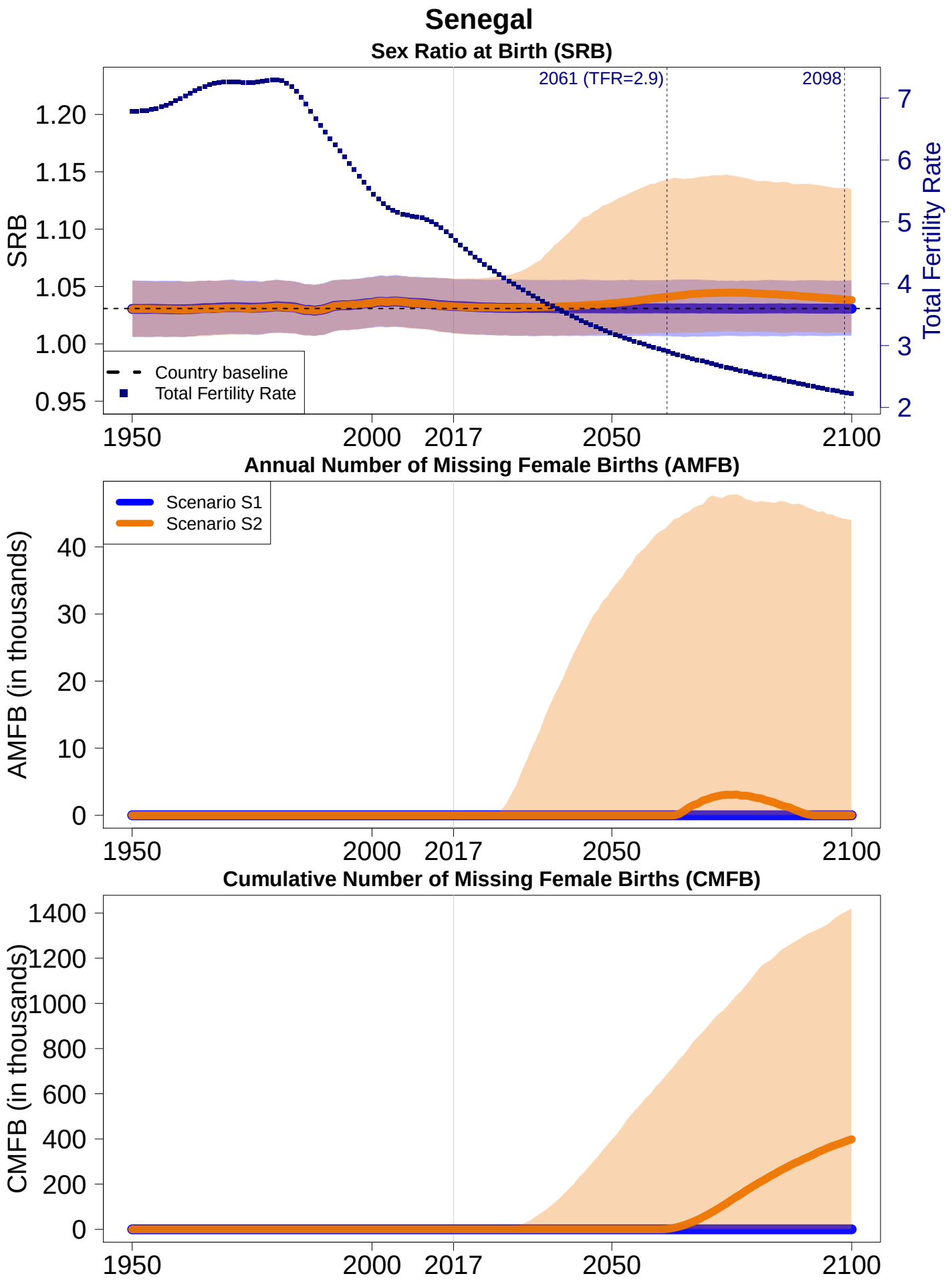

Montenegro
Sex Ratio at Birth (SRB)
1979 (TFR=2.3)
2023
SRB
Total Fertility Rate
Country baseline
Total Fertility Rate
1950
2000
2017
2050
2100
Annual Number of Missing Female Births (AMFB)
Scenario S1
Scenario S2
AMFB (in thousands)
Cumulative Number of Missing Female Births (CMFB)
CMFB (in thousands)

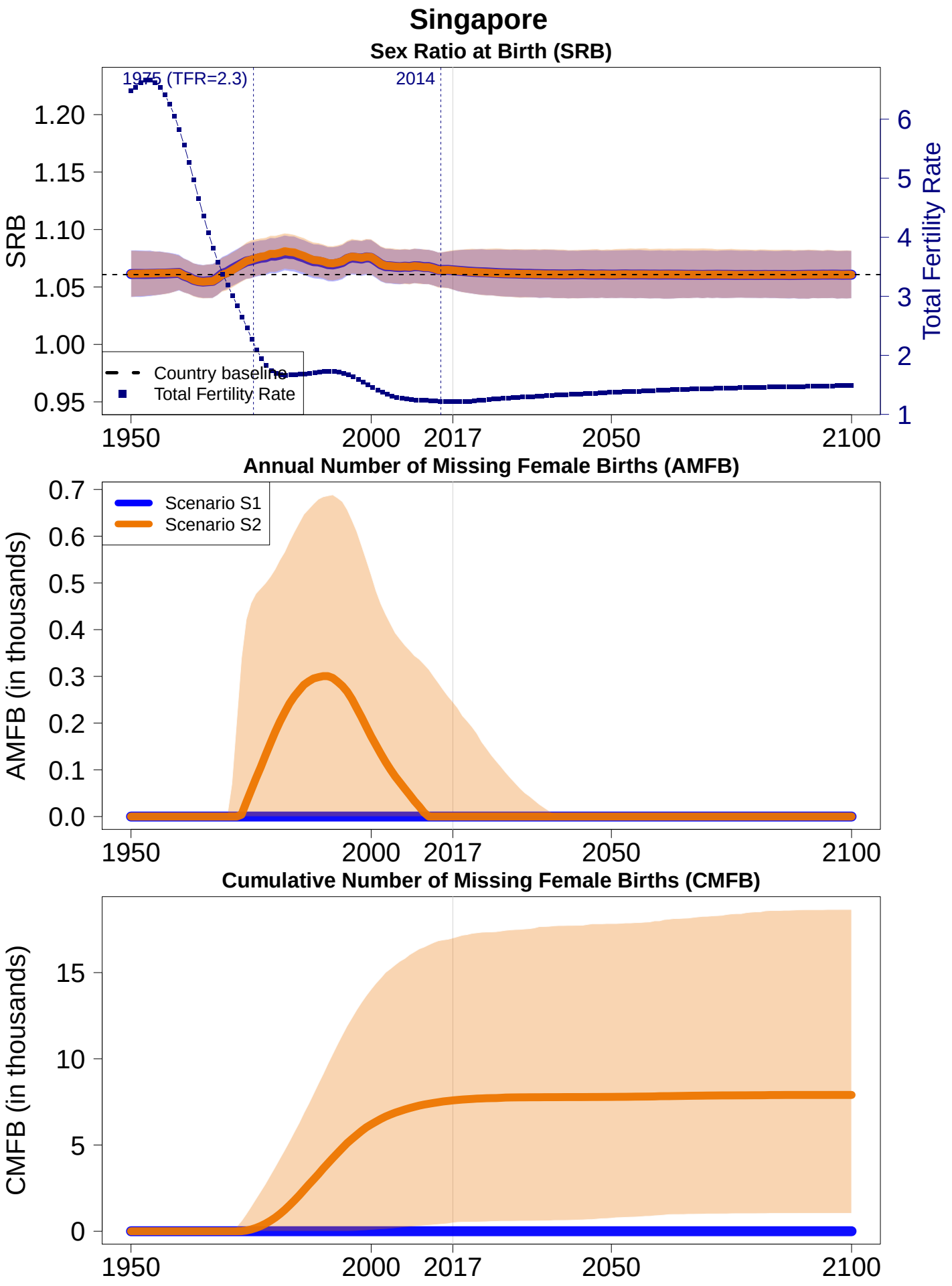

Morocco
Sex Ratio at Birth (SRB)
2003 (TFR=2.6)
2040
SRB
Total Fertility Rate
Country baseline
Total Fertility Rate
1.20
1.15
1.10
1.05
1.00
0.95
7
6
5
4
3
2
1950
2000
2017
2050
2100
Annual Number of Missing Female Births (AMFB)
AMFB (in thousands)
Scenario S1
Scenario S2
30
25
20
15
10
5
0
Cumulative Number of Missing Female Births (CMFB)
CMFB (in thousands)
1000
800
600
400
200
0

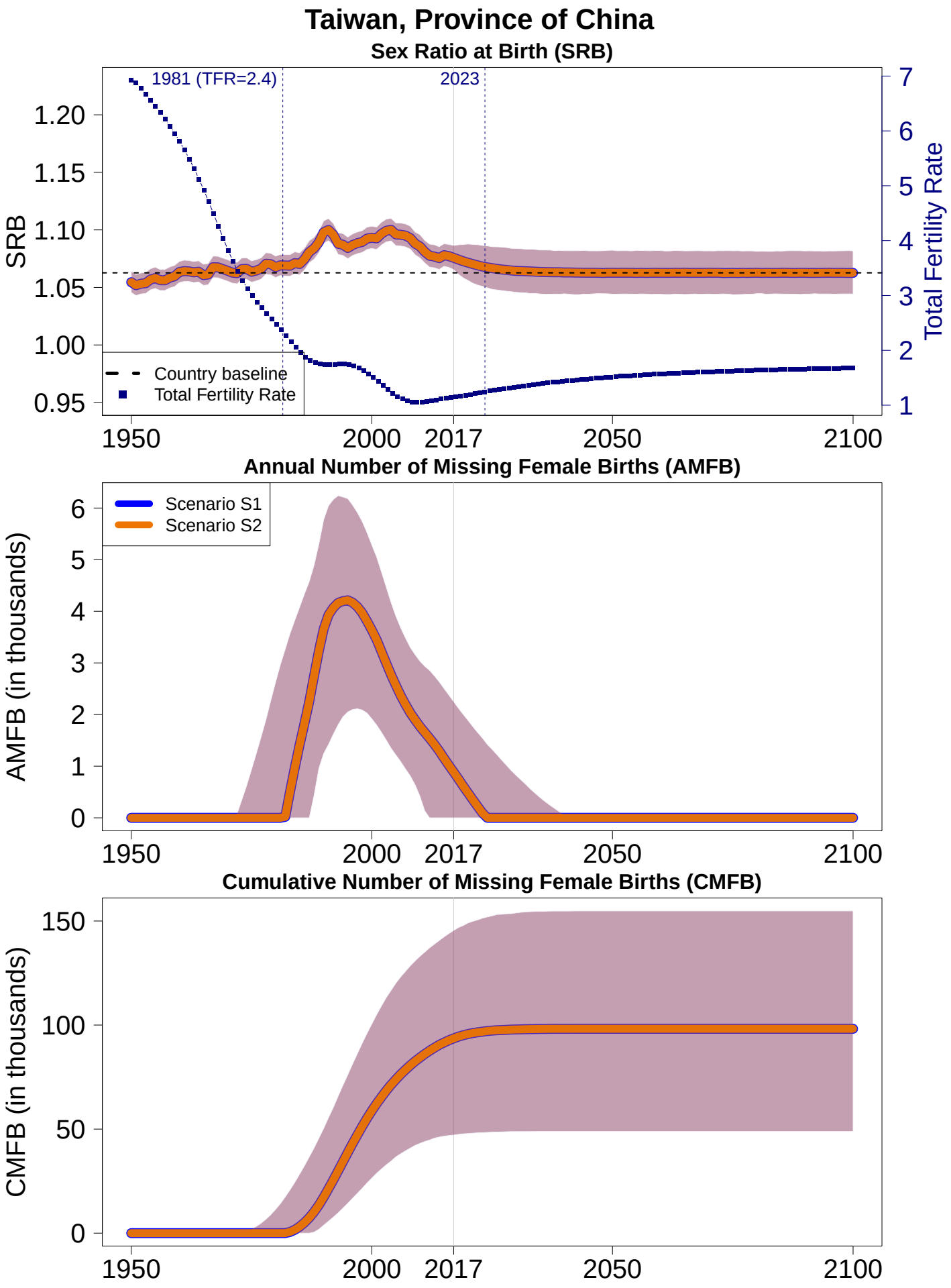

Nepal
Sex Ratio at Birth (SRB)
2009 (TFR=2.6)
2047
SRB
Total Fertility Rate
Country baseline
Total Fertility Rate
1.20
1.15
1.10
1.05
1.00
0.95
6
5
4
3
2
1950
2000
2017
2050
2100
Annual Number of Missing Female Births (AMFB)
Scenario S1
Scenario S2
AMFB (in thousands)
25
20
15
10
5
0
Cumulative Number of Missing Female Births (CMFB)
CMFB (in thousands)
700
600
500
400
300
200
100
0

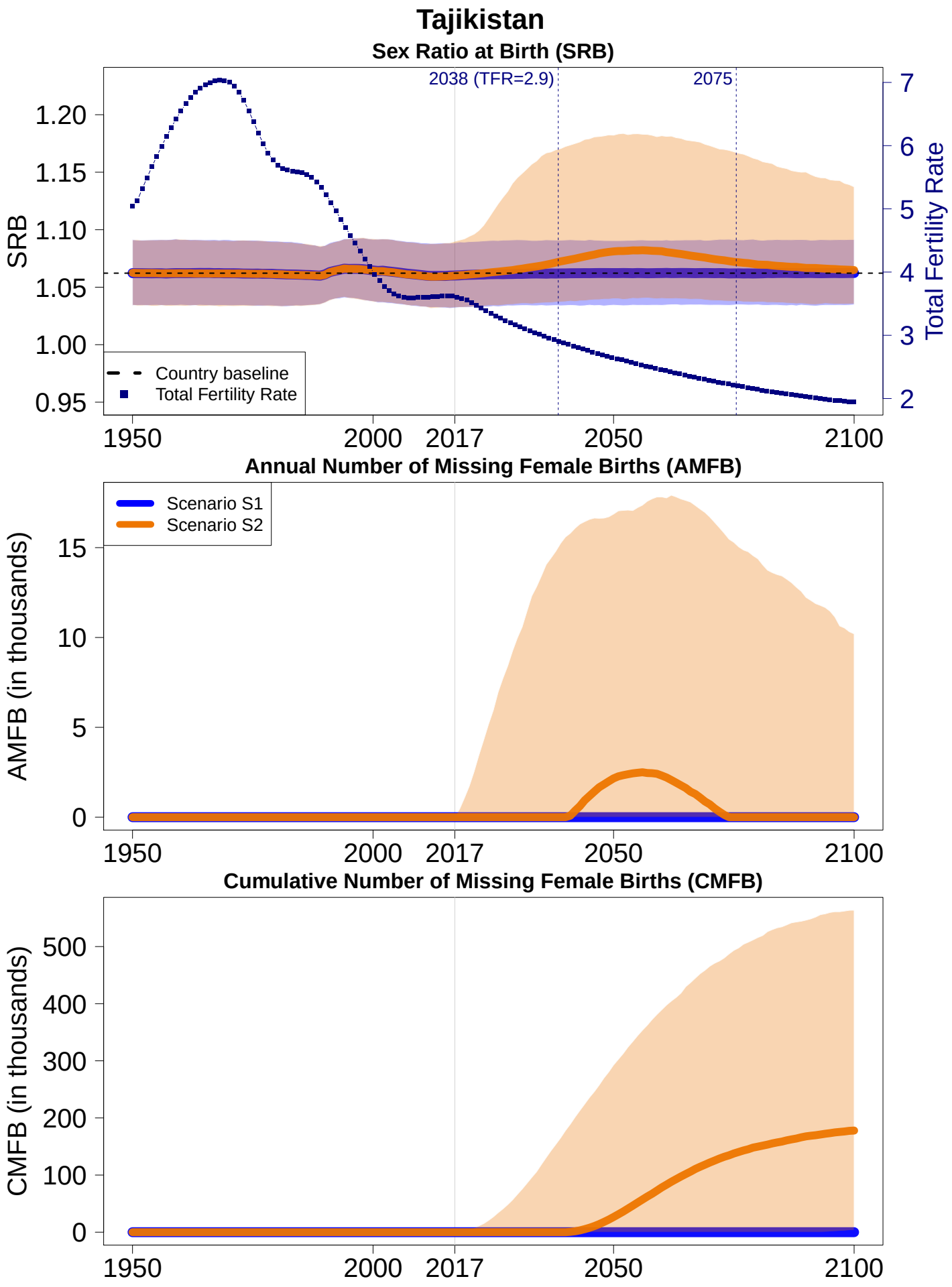

Nigeria
Sex Ratio at Birth (SRB)
2065 (TFR=2.9)
SRB
Total Fertility Rate
1.20
1.15
1.10
1.05
1.00
0.95
6
5
4
3
2
Country baseline
Total Fertility Rate
1950
2000
2017
2050
2100
Annual Number of Missing Female Births (AMFB)
Scenario S1
Scenario S2
AMFB (in thousands)
500
400
300
200
100
0
Cumulative Number of Missing Female Births (CMFB)
CMFB (in thousands)
15000
10000
5000
0

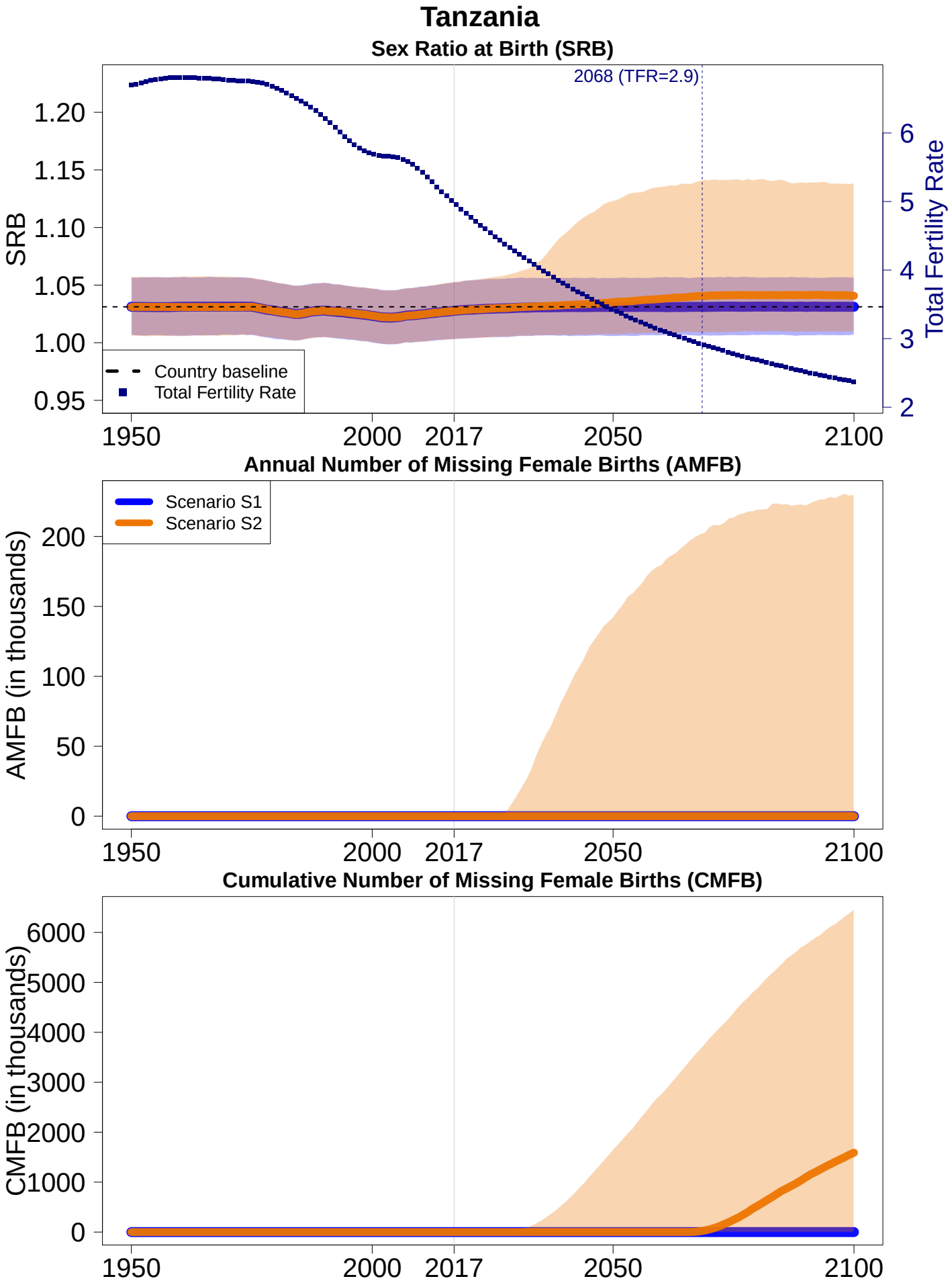

Pakistan
Sex Ratio at Birth (SRB)
2030 (TFR=2.9)
2067
SRB
Total Fertility Rate
Country baseline
Total Fertility Rate
1.20
1.15
1.10
1.05
1.00
0.95
6
5
4
3
2
1950
2000
2017
2050
2100
Annual Number of Missing Female Births (AMFB)
AMFB (in thousands)
Scenario S1
Scenario S2
300
250
200
150
100
50
0
Cumulative Number of Missing Female Births (CMFB)
CMFB (in thousands)
10000
8000
6000
4000
2000
0

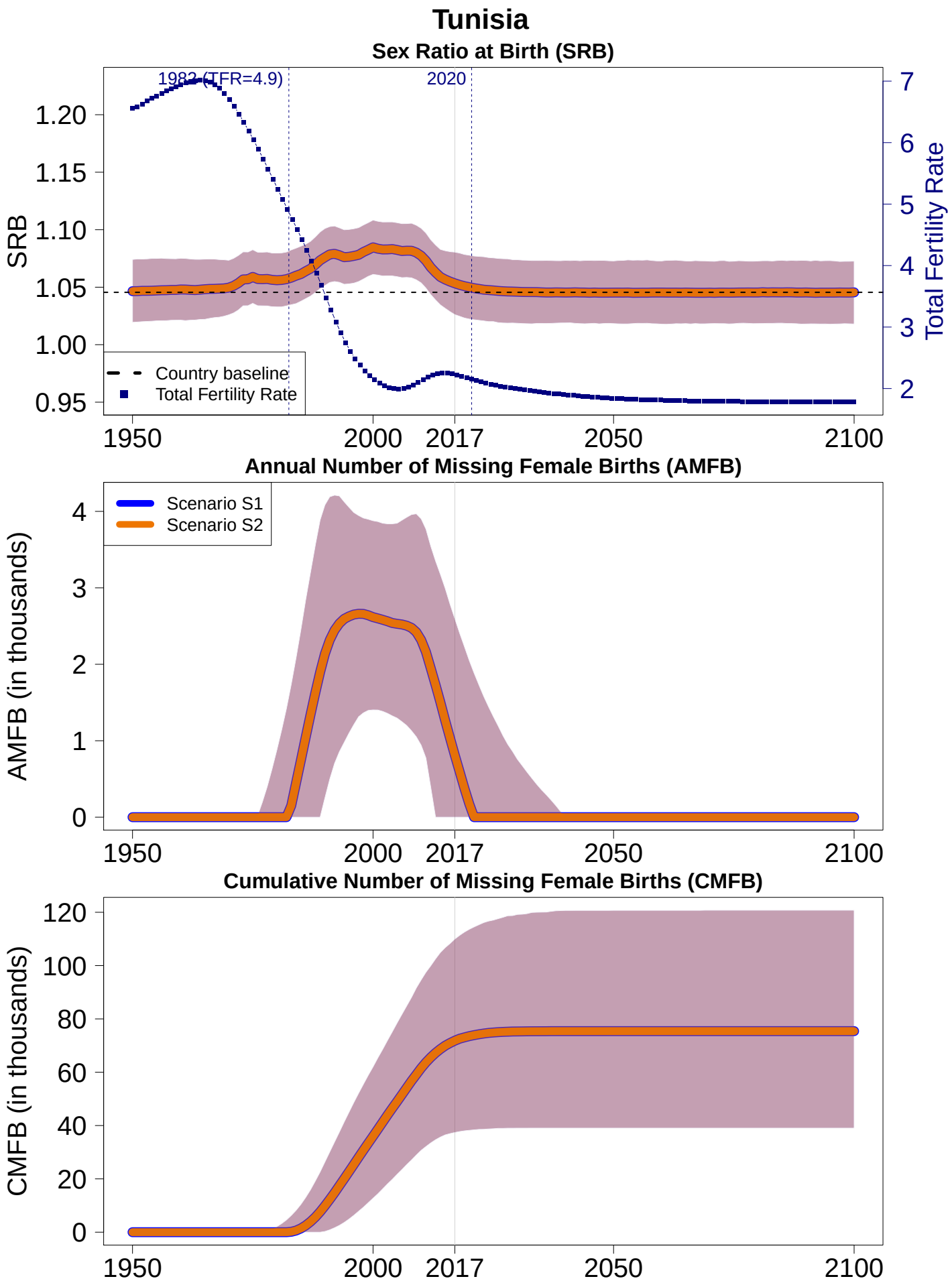

Senegal
Sex Ratio at Birth (SRB)
2061 (TFR=2.9)
2098
SRB
Total Fertility Rate
Country baseline
Total Fertility Rate
1.20
1.15
1.10
1.05
1.00
0.95
7
6
5
4
3
2
1950
2000
2017
2050
2100
Annual Number of Missing Female Births (AMFB)
Scenario S1
Scenario S2
AMFB (in thousands)
40
30
20
10
0
Cumulative Number of Missing Female Births (CMFB)
CMFB (in thousands)
1400
1200
1000
800
600
400
200
0

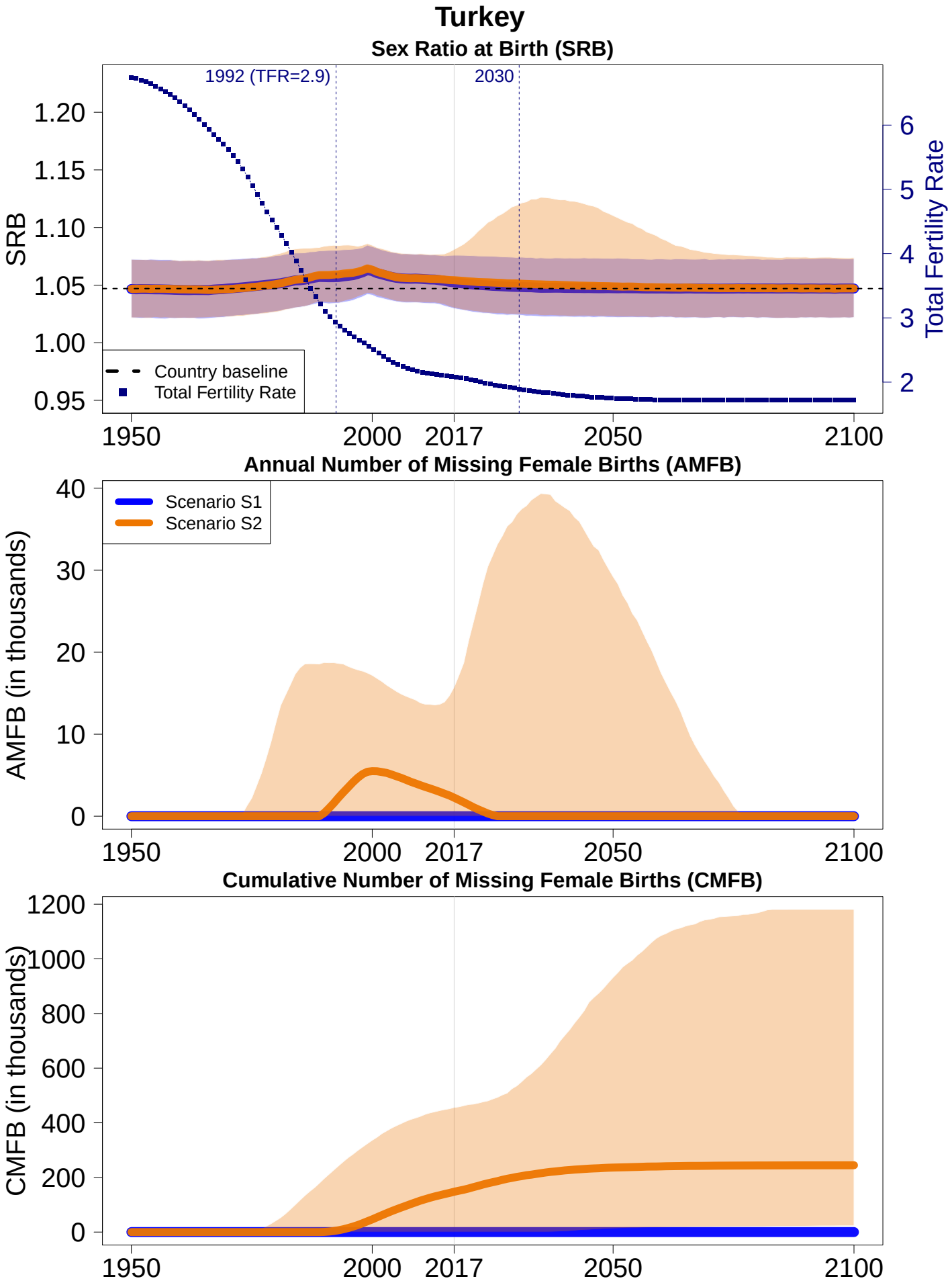

Singapore
Sex Ratio at Birth (SRB)
1975 (TFR=2.3)
2014
SRB
Total Fertility Rate
Country baseline
Total Fertility Rate
1.20
1.15
1.10
1.05
1.00
0.95
6
5
4
3
2
1
1950
2000
2017
2050
2100
Annual Number of Missing Female Births (AMFB)
AMFB (in thousands)
Scenario S1
Scenario S2
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Cumulative Number of Missing Female Births (CMFB)
CMFB (in thousands)
15
10
5
0

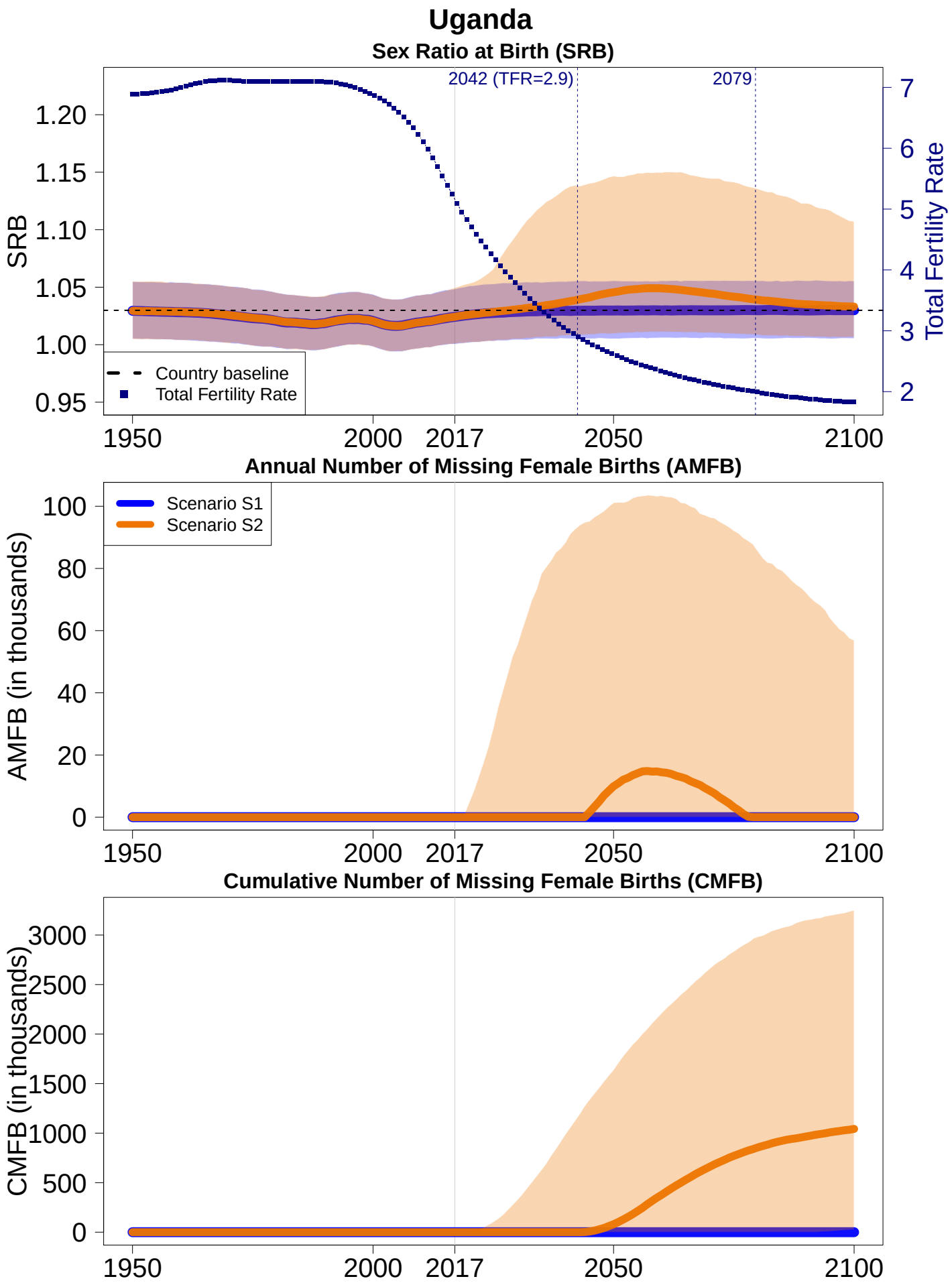

Taiwan, Province of China
Sex Ratio at Birth (SRB)
1981 (TFR=2.4)
2023
SRB
Total Fertility Rate
Country baseline
Total Fertility Rate
1.20
1.15
1.10
1.05
1.00
0.95
7
6
5
4
3
2
1
1950
2000
2017
2050
2100
Annual Number of Missing Female Births (AMFB)
Scenario S1
Scenario S2
AMFB (in thousands)
6
5
4
3
2
1
0
1950
2000
2017
2050
2100
Cumulative Number of Missing Female Births (CMFB)
CMFB (in thousands)
150
100
50
0
1950
2000
2017
2050
2100

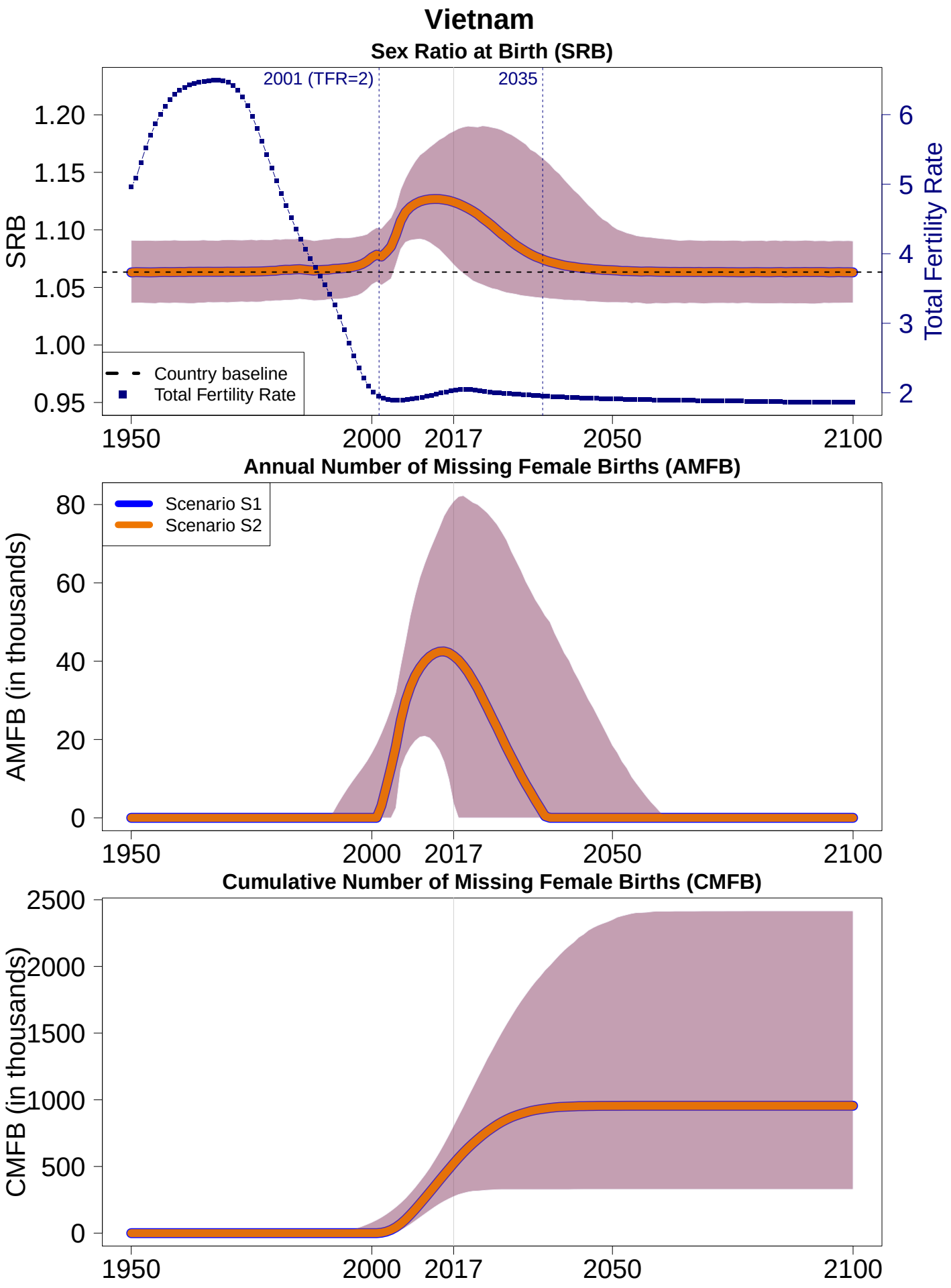

Tajikistan
Sex Ratio at Birth (SRB)
2038 (TFR=2.9)
2075
SRB
Total Fertility Rate
Country baseline
Total Fertility Rate
1950
2000
2017
2050
2100
Annual Number of Missing Female Births (AMFB)
Scenario S1
Scenario S2
AMFB (in thousands)
Cumulative Number of Missing Female Births (CMFB)
CMFB (in thousands)


Tanzania
Sex Ratio at Birth (SRB)
2068 (TFR=2.9)
SRB
Total Fertility Rate
1.20
1.15
1.10
1.05
1.00
0.95
6
5
4
3
2
Country baseline
Total Fertility Rate
1950
2000
2017
2050
2100
Annual Number of Missing Female Births (AMFB)
Scenario S1
Scenario S2
AMFB (in thousands)
200
150
100
50
0
1950
2000
2017
2050
2100
Cumulative Number of Missing Female Births (CMFB)
CMFB (in thousands)
6000
5000
4000
3000
2000
1000
0
1950
2000
2017
2050
2100


Tunisia
Sex Ratio at Birth (SRB)
1982 (TFR=4.9)
2020
SRB
Total Fertility Rate
Country baseline
Total Fertility Rate
1950
2000
2017
2050
2100
Annual Number of Missing Female Births (AMFB)
Scenario S1
Scenario S2
AMFB (in thousands)
Cumulative Number of Missing Female Births (CMFB)
CMFB (in thousands)


Turkey
Sex Ratio at Birth (SRB)
1992 (TFR=2.9)
2030
SRB
Total Fertility Rate
Country baseline
Total Fertility Rate
1950
2000
2017
2050
2100
Annual Number of Missing Female Births (AMFB)
AMFB (in thousands)
Scenario S1
Scenario S2
Cumulative Number of Missing Female Births (CMFB)
CMFB (in thousands)


Uganda
Sex Ratio at Birth (SRB)
2042 (TFR=2.9)
2079
SRB
Total Fertility Rate
Country baseline
Total Fertility Rate
1950
2000
2017
2050
2100
Annual Number of Missing Female Births (AMFB)
AMFB (in thousands)
Scenario S1
Scenario S2
Cumulative Number of Missing Female Births (CMFB)
CMFB (in thousands)


Vietnam
Sex Ratio at Birth (SRB)
2001 (TFR=2)
2035
SRB
Total Fertility Rate
Country baseline
Total Fertility Rate
1950
2000
2017
2050
2100
Annual Number of Missing Female Births (AMFB)
Scenario S1
Scenario S2
AMFB (in thousands)
Cumulative Number of Missing Female Births (CMFB)
CMFB (in thousands)

# References


[1] Chao, F., Gerland, P., Cook, A. R., and Alkema, L. (2019). Systematic assessment of the sex ratio at birth for all countries and estimation of national imbalances and regional reference levels. *Proceedings of the National Academy of Sciences*, 116(19):9303–9311.

[2] Chao, F., Gerland, P., Cook, A. R., and Alkema, L. (2020, accepted by Annals of Applied Statistics). Global estimation and scenario-based projections of sex ratio at birth and missing female births using a bayesian hierarchical time series mixture model. *arXiv preprint arXiv:2006.07101*.

[3] United Nations, Department of Economic and Social Affairs, Population Division (2019). *World Population Prospects: The 2019 Revision*. Available from `http://esa.un.org/unpd/wpp/Download/Standard/Population/`.

— The End —