

Nigeria

```
## [1] "Census Females"

## # A tibble: 86 x 3
##   age `1963` `1991`
##   <dbl> <dbl> <dbl>
## 1     0 786009 1033144
## 2     1 926229. 1335771.
## 3     2 986236. 1425667.
## 4     3 962645. 1461804.
## 5     4 955975 1503427.
## 6     5 924205. 1507044.
## 7     6 873599. 1478943.
## 8     7 829089. 1451870.
## 9     8 765969. 1389486.
## 10    9 707596 1299958.
## # ... with 76 more rows

## [1] "Census Females 5-year"

## # A tibble: 18 x 2
##   age `2006`
##   <dbl> <dbl>
## 1     0 11025750.
## 2     5  9472730.
## 3    10  8060730.
## 4    15  7388734.
## 5    20  7108729.
## 6    25  6378455.
## 7    30  5068074.
## 8    35  3841144.
## 9    40  2955588.
## 10   45  2251449.
## 11   50  1669202.
## 12   55  1181326.
## 13   60   893306.
## 14   65   674225.
## 15   70   476063.
## 16   75   355207.
## 17   80   351373.
## 18   85   311204.

## [1] "Census Males"

## # A tibble: 86 x 3
##   age `1963` `1991`
##   <dbl> <dbl> <dbl>
## 1     0 760072 1101442
## 2     1 905768. 1425838.
## 3     2 960435 1494162.
## 4     3 945542. 1525346.
## 5     4 951237. 1559762.
## 6     5 933464. 1555965.
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## 7      6 902693. 1529667
## 8      7 888787. 1512333
## 9      8 850208. 1457972.
## 10     9 811283. 1376666.
## # ... with 76 more rows
```

```
## [1] "Census Males 5-year"
```

```
## # A tibble: 18 x 2
```

```
##   age      `2006`
```

```
##   <dbl>      <dbl>
```

```
## 1      0 11569219.
```

```
## 2      5 10212690.
```

```
## 3     10  8733445.
```

```
## 4     15  7453733
```

```
## 5     20  6386522
```

```
## 6     25  5452913.
```

```
## 7     30  4551491.
```

```
## 8     35  3805735.
```

```
## 9     40  3253409.
```

```
## 10    45  2720620.
```

```
## 11    50  2119792.
```

```
## 12    55  1526674
```

```
## 13    60  1136161
```

```
## 14    65   846520.
```

```
## 15    70   621957
```

```
## 16    75   457375
```

```
## 17    80   408680
```

```
## 18    85   404021
```

Thiele log-Normal Hump Spline

```
## [1] "relative convergence (4)"
```

| | | | | |
|----|--------------------------|-------------------------|-----------------------------|------------------|
| ## | log_tau2_logpop_f | log_tau2_logpop_f | log_tau2_logpop_m | log_tau2_ |
| ## | 4.2698328 | 4.6567532 | 3.9630952 | 3 |
| ## | log_tau2_gx_m | log_lambda_gx_age_f | log_lambda_gx_age_m | log_lambda_g |
| ## | 1.6616928 | -1.2394367 | 5.6377496 | 3 |
| ## | log_lambda_gx_agemtime_m | log_lambda_tp | log_lambda_tp_0_inflated_sd | log_disp |
| ## | 6.9077666 | 1.3173746 | -1.0045040 | 0 |
| ## | log_marginal_prec_psi_f | log_marginal_prec_A_f | log_marginal_prec_B_f | log_marginal_pr |
| ## | 6.8038475 | 6.7849651 | 5.8481848 | 6 |
| ## | log_marginal_prec_B_m | log_lambda_phi_f | log_lambda_psi_f | log_lambda_ |
| ## | 2.8395764 | 4.3071309 | 4.3067469 | 3 |
| ## | log_lambda_A_f | log_lambda_B_f | log_lambda_phi_m | log_lamb |
| ## | 4.3099565 | 4.4255448 | 4.3072969 | 4 |
| ## | log_lambda_epsilon_m | log_lambda_A_m | log_lambda_B_m | logit_lambda_slo |
| ## | 4.3550870 | 4.3061487 | 4.3231983 | 0 |
| ## | logit_lambda_slope_rho_m | logit_delta_slope_rho_m | logit_epsilon_slope_rho_m | |
| ## | -0.0602370 | 3.0799935 | -1.0400305 | |

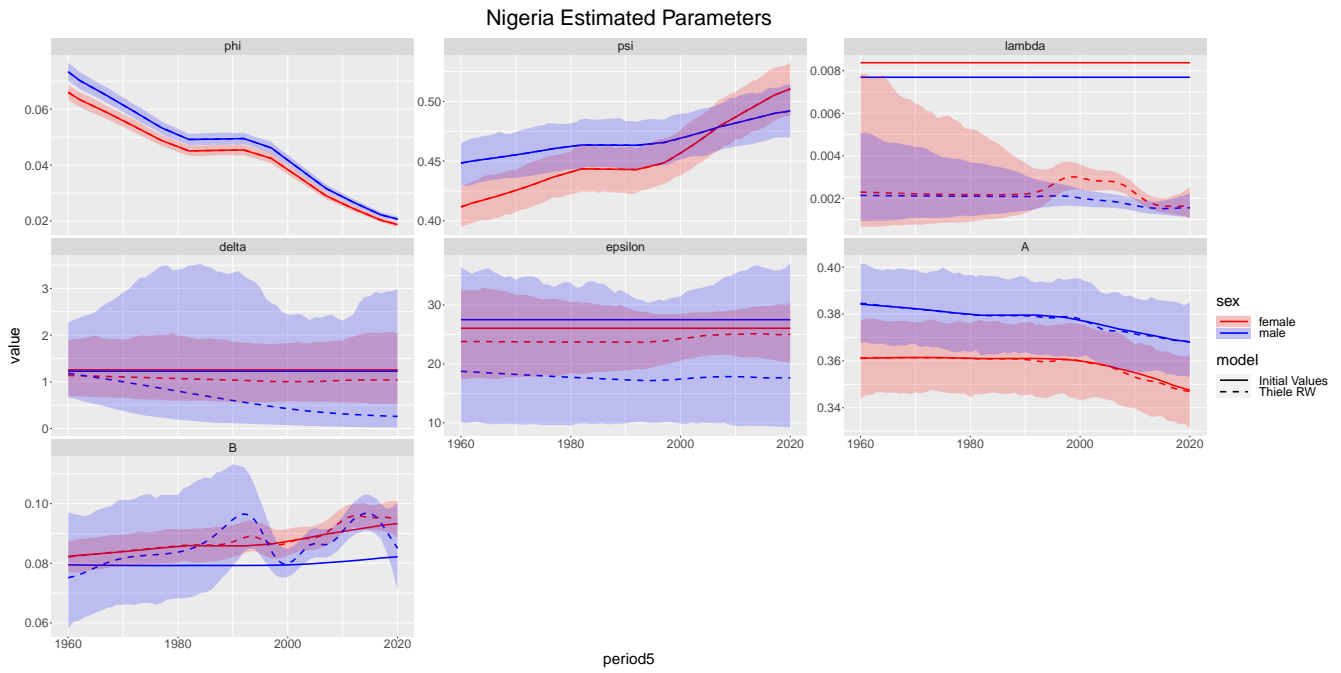


Figure 1: Estimated parameters

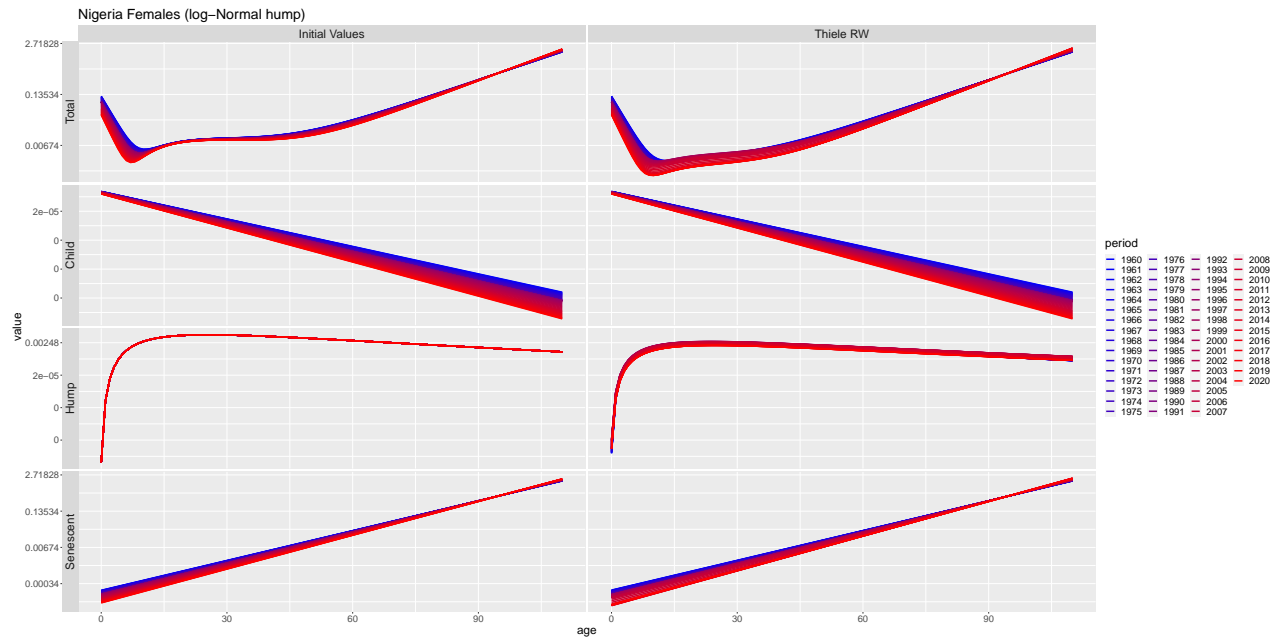


Figure 2: Thiele Decomposed

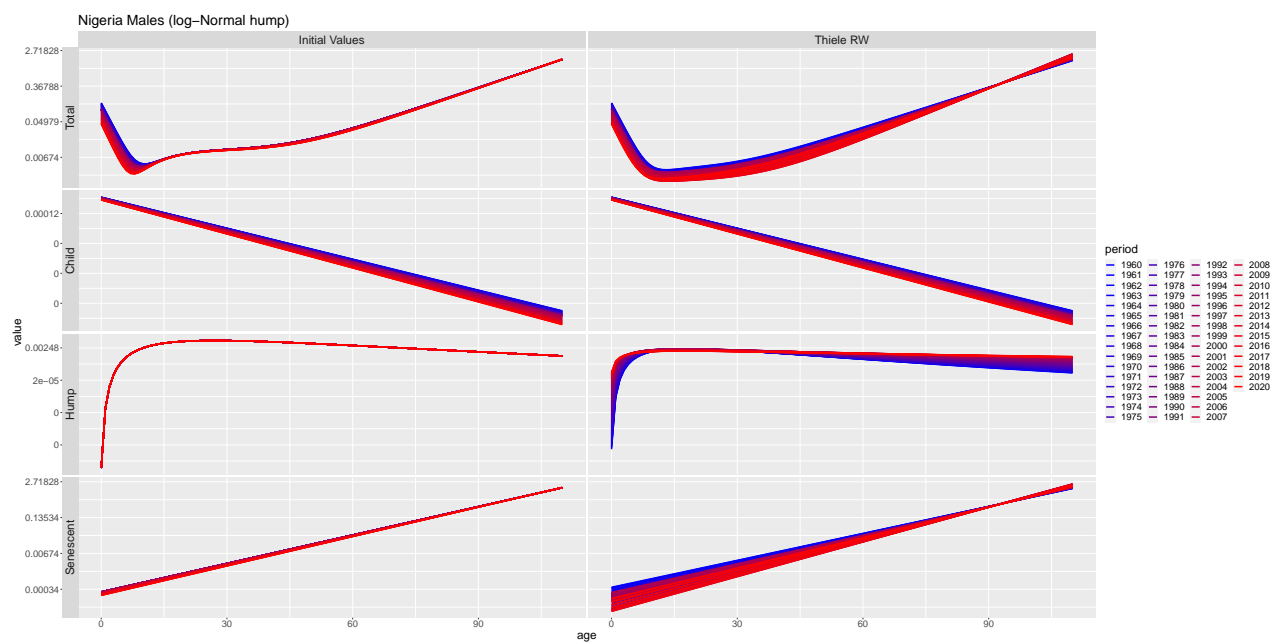


Figure 3: Thiele Decomposed

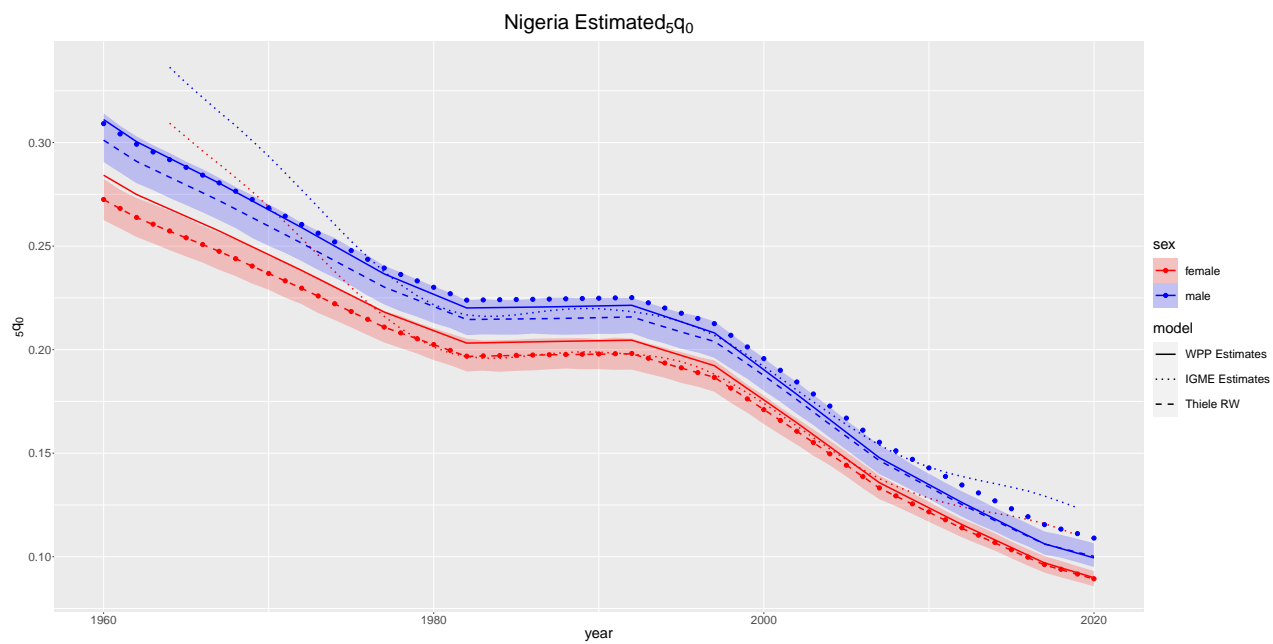


Figure 4: Estimated $5q_0$

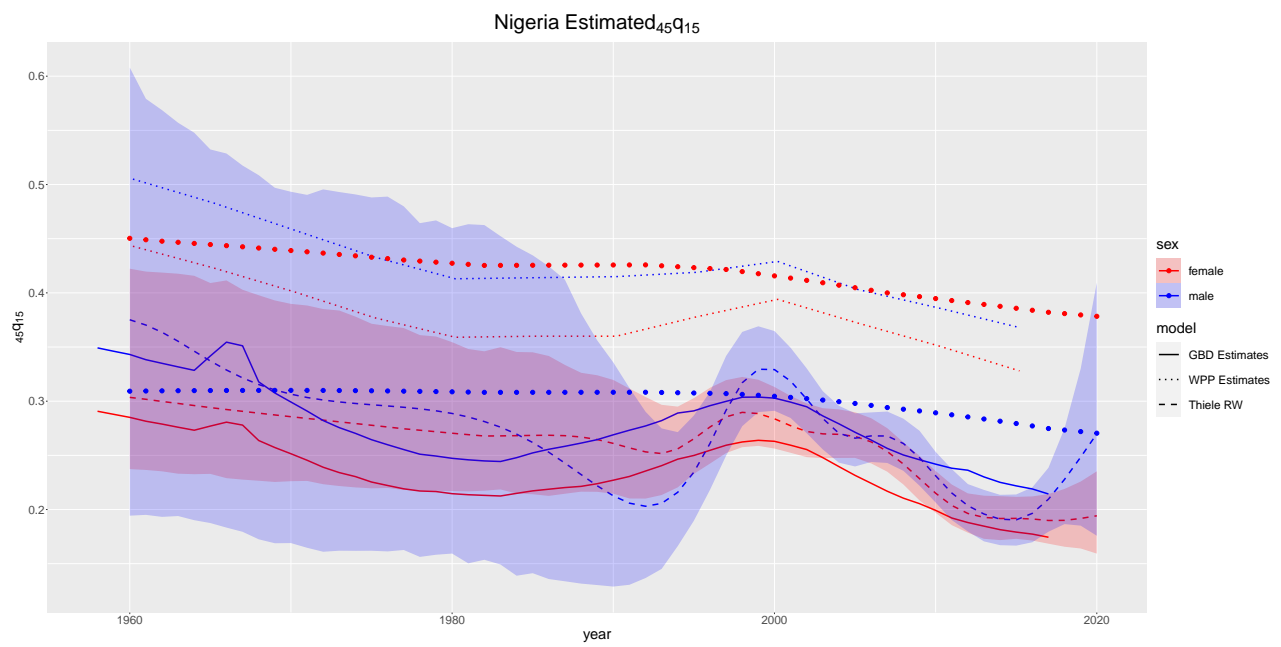


Figure 5: Estimated $_{45}q_{15}$

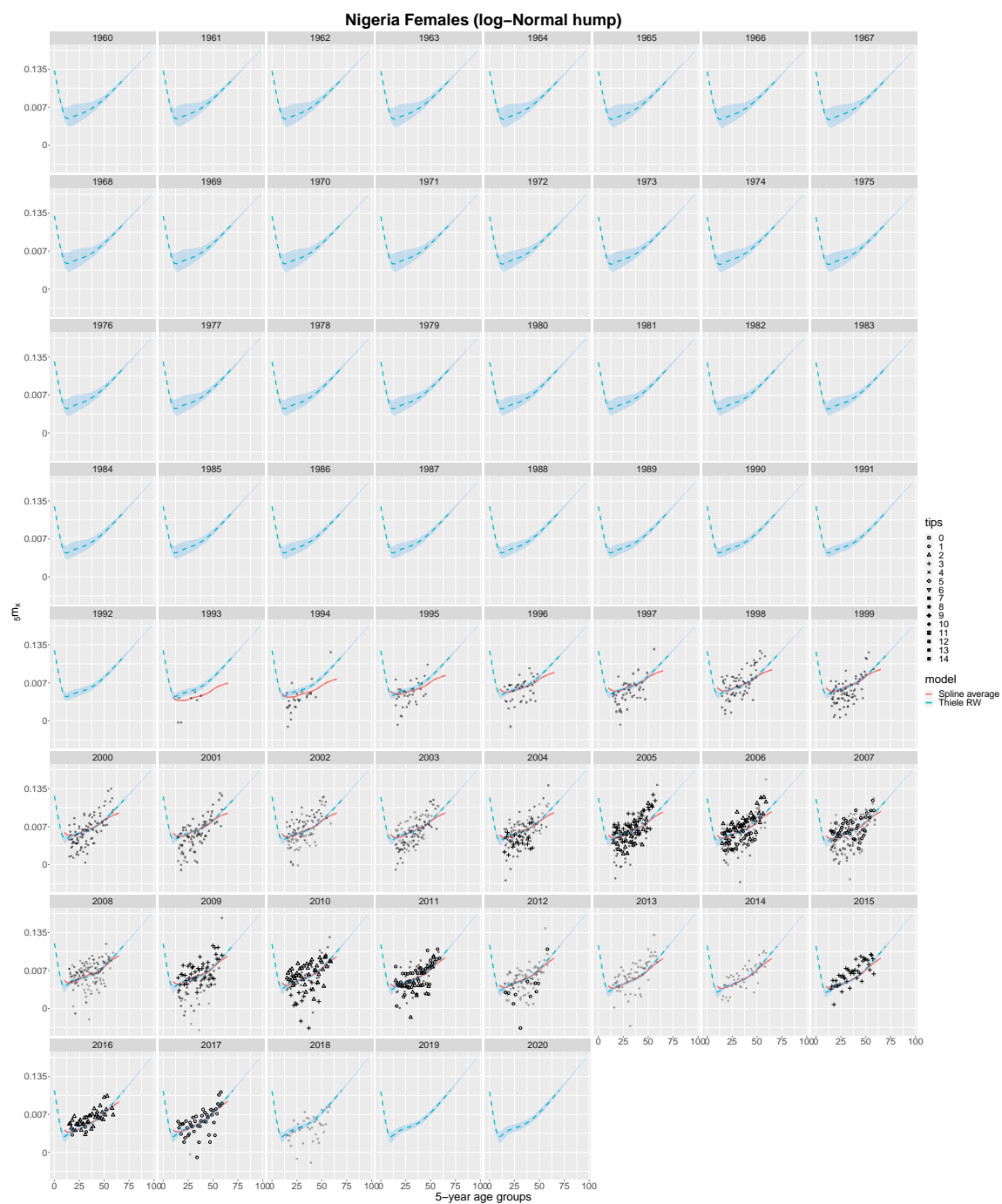


Figure 6: Mortality Schedules

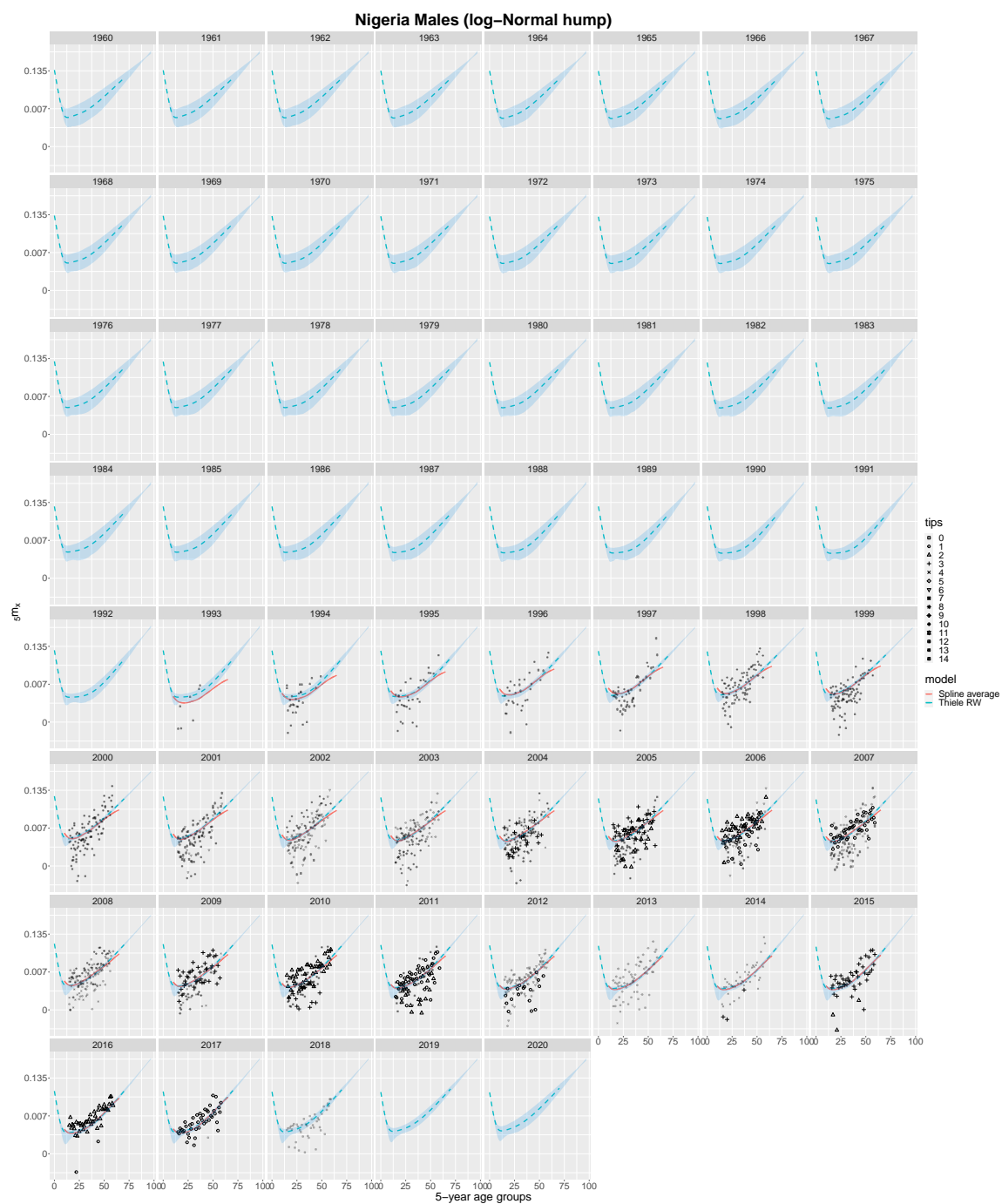


Figure 7: Mortality Schedules

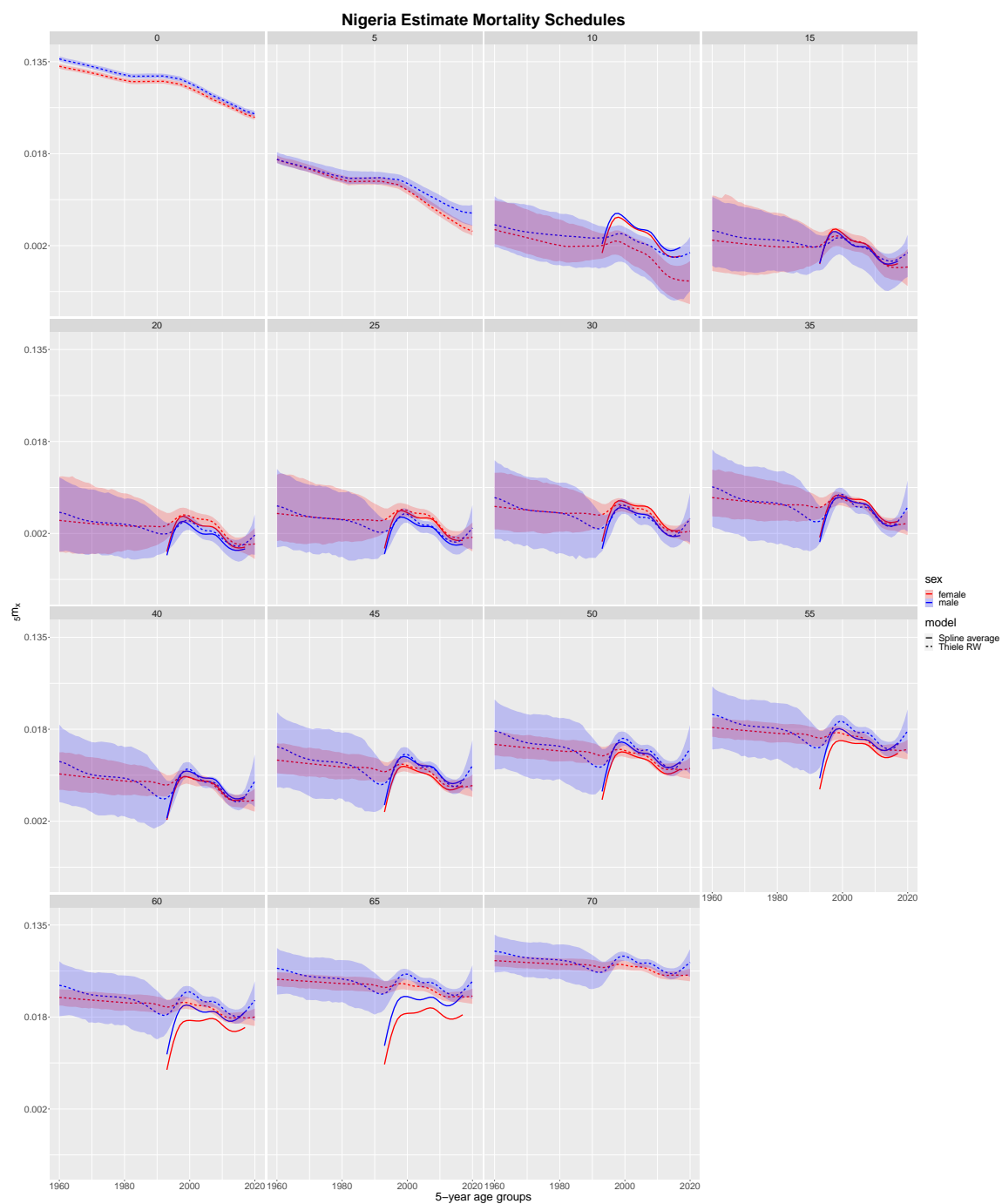


Figure 8: Mortality Schedules

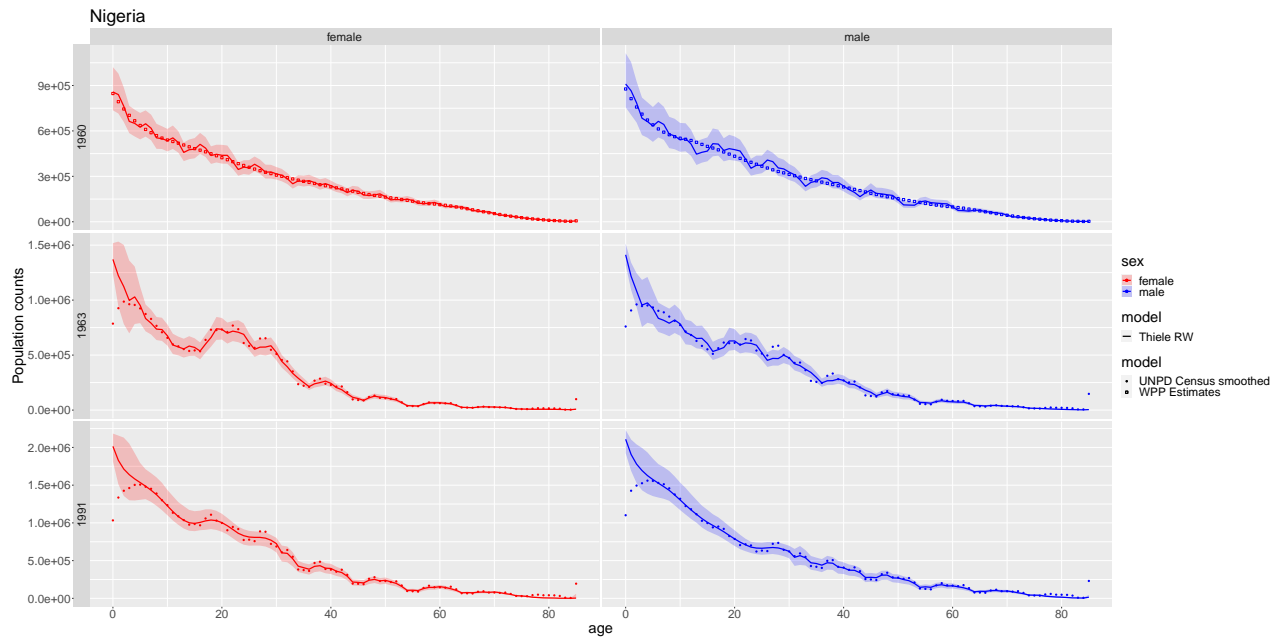


Figure 9: Population

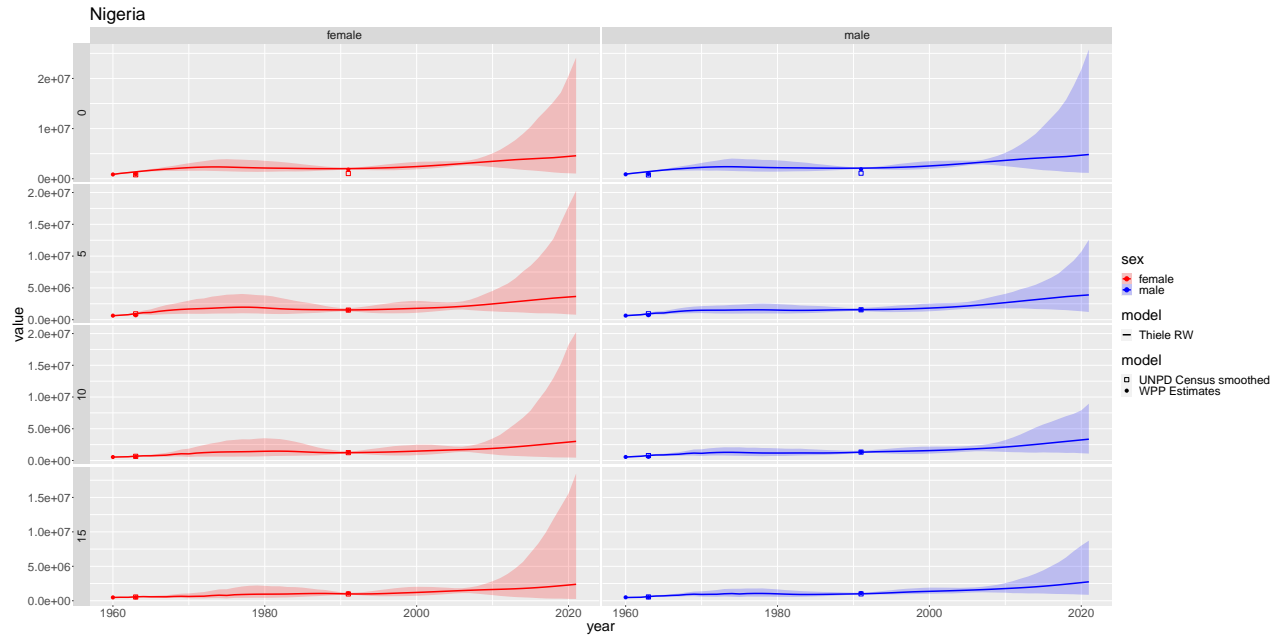


Figure 10: Population

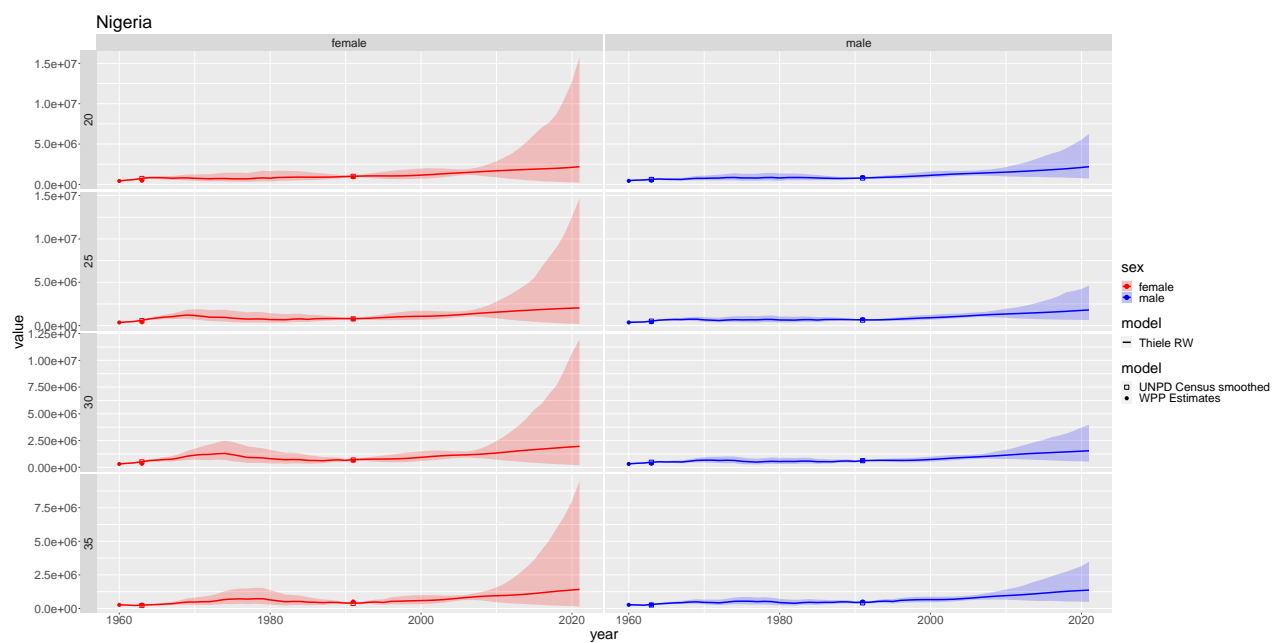


Figure 11: Population

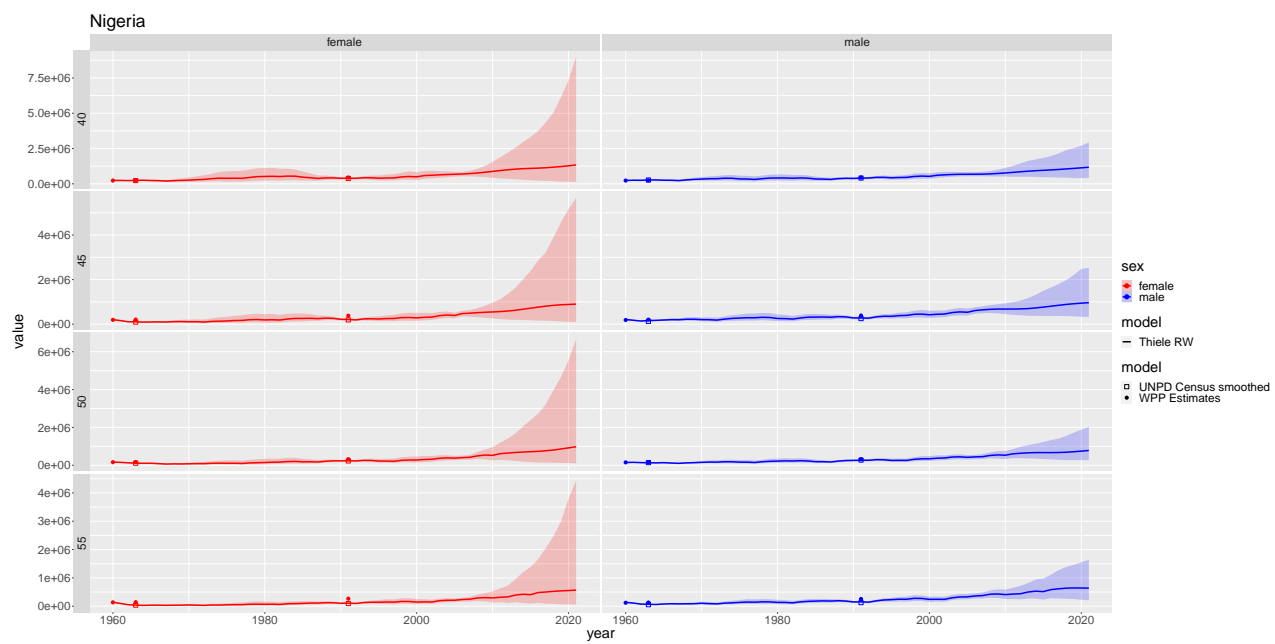


Figure 12: Population

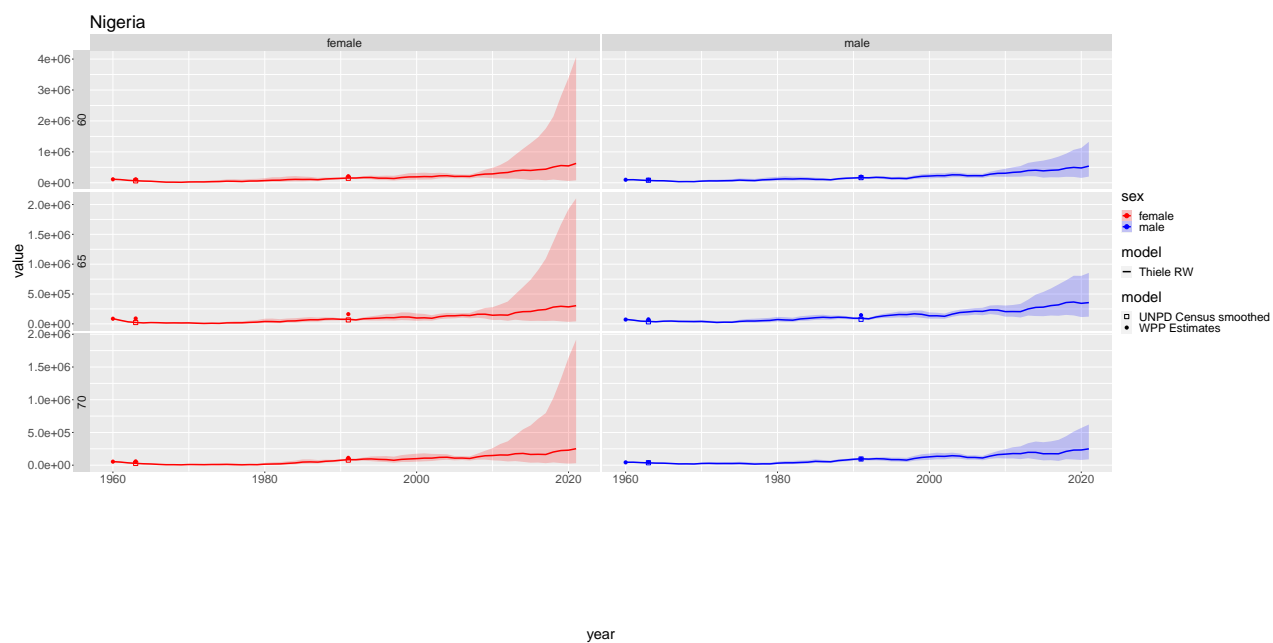


Figure 13: Population

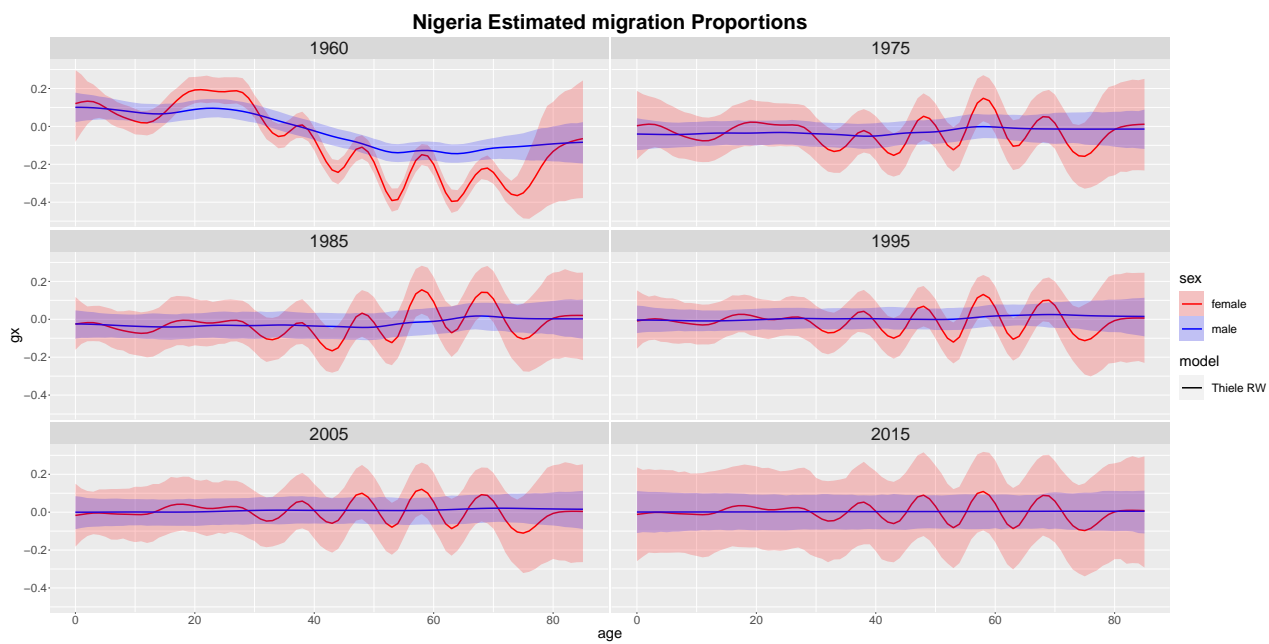


Figure 14: Migration

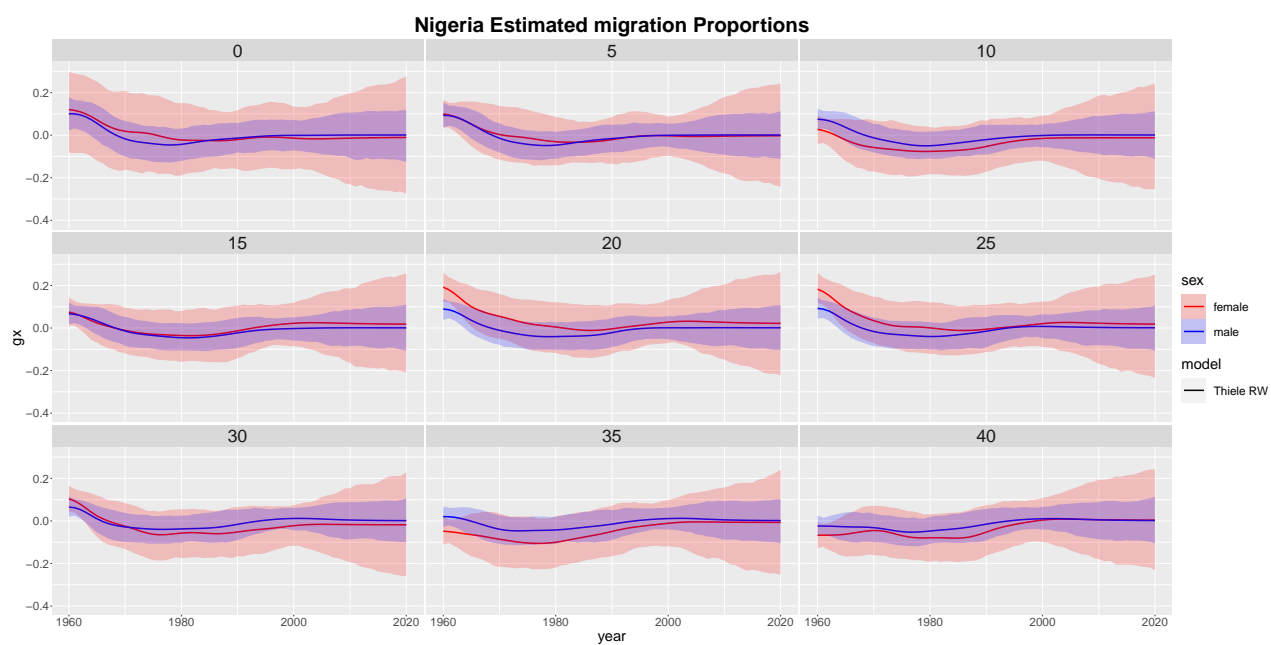


Figure 15: Migration

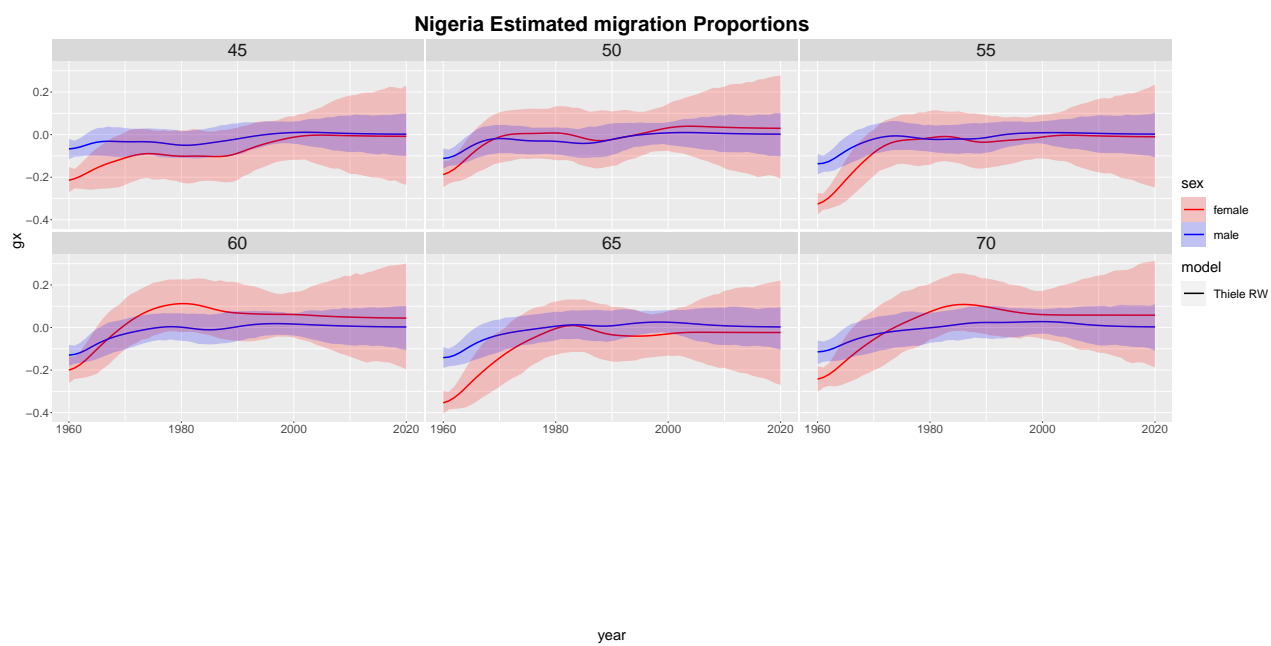


Figure 16: Migration

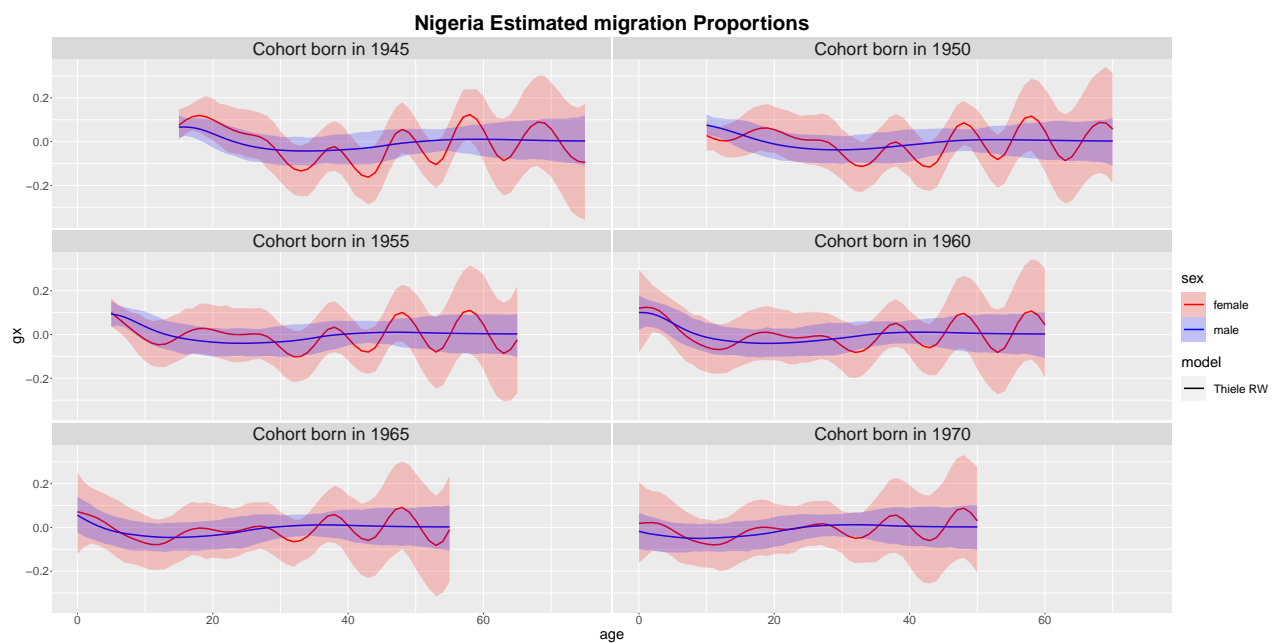


Figure 17: Migration

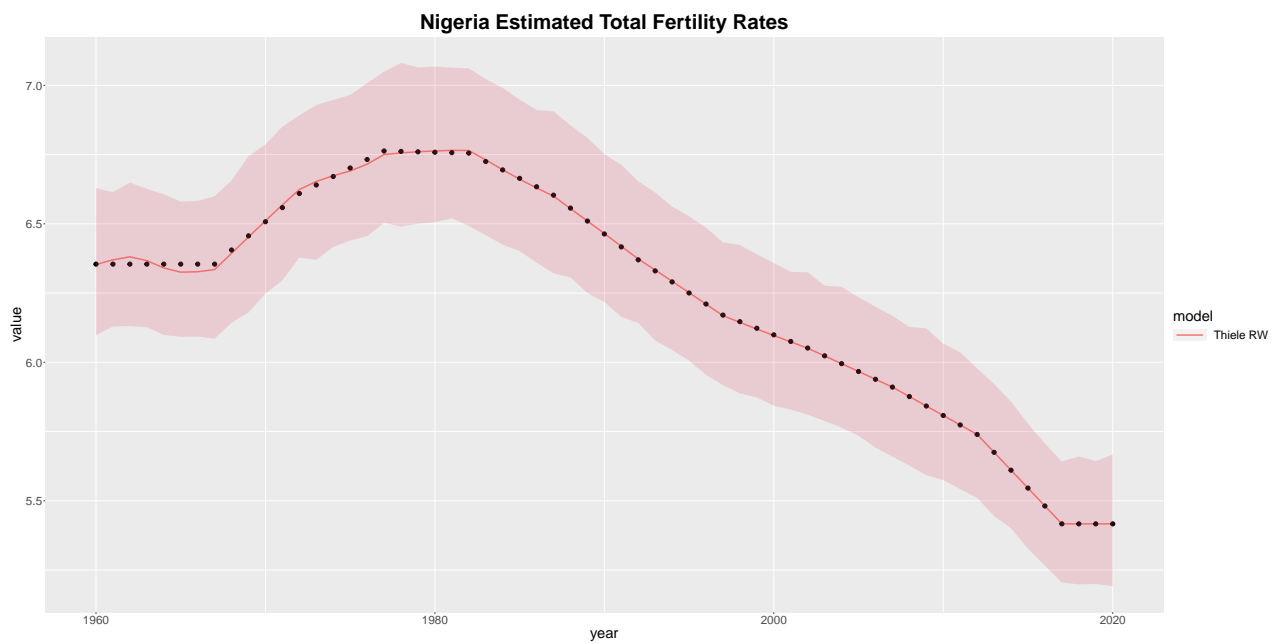


Figure 18: Total Fertility

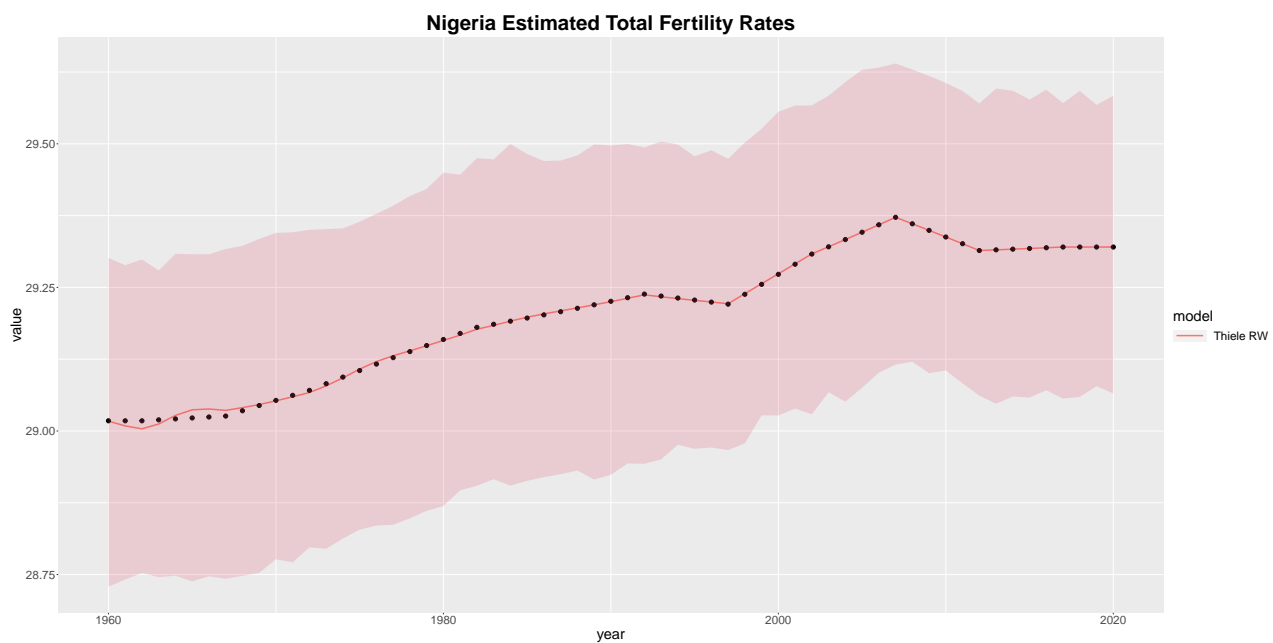


Figure 19: Mean age at births

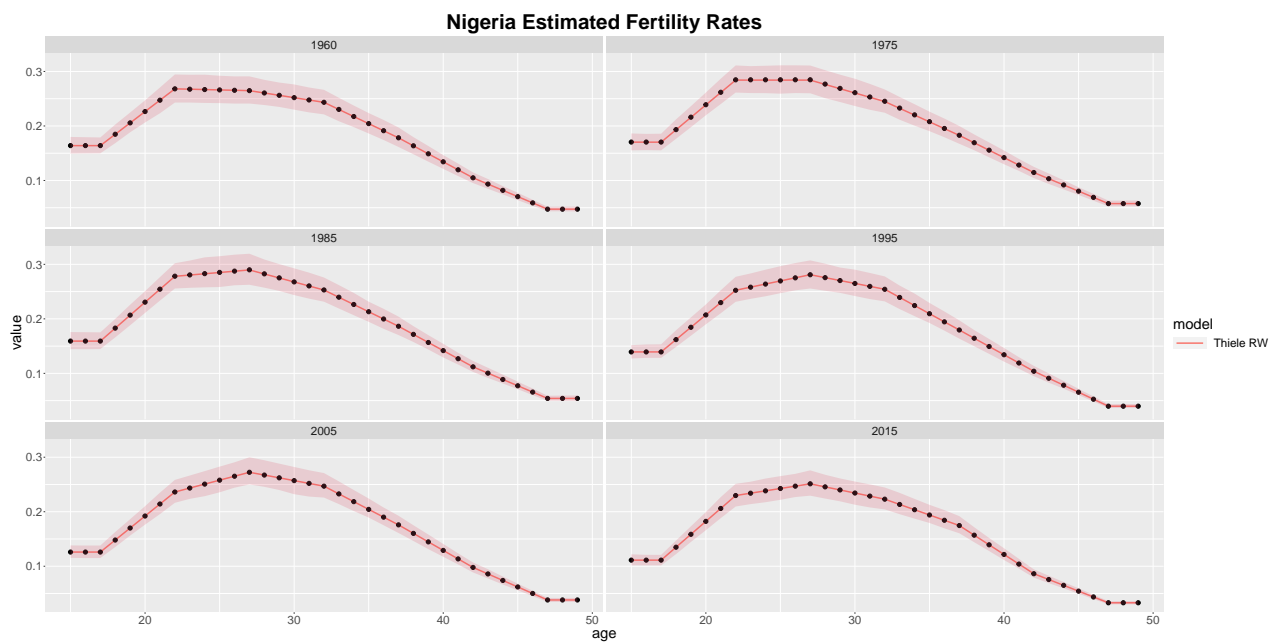


Figure 20: Fertility

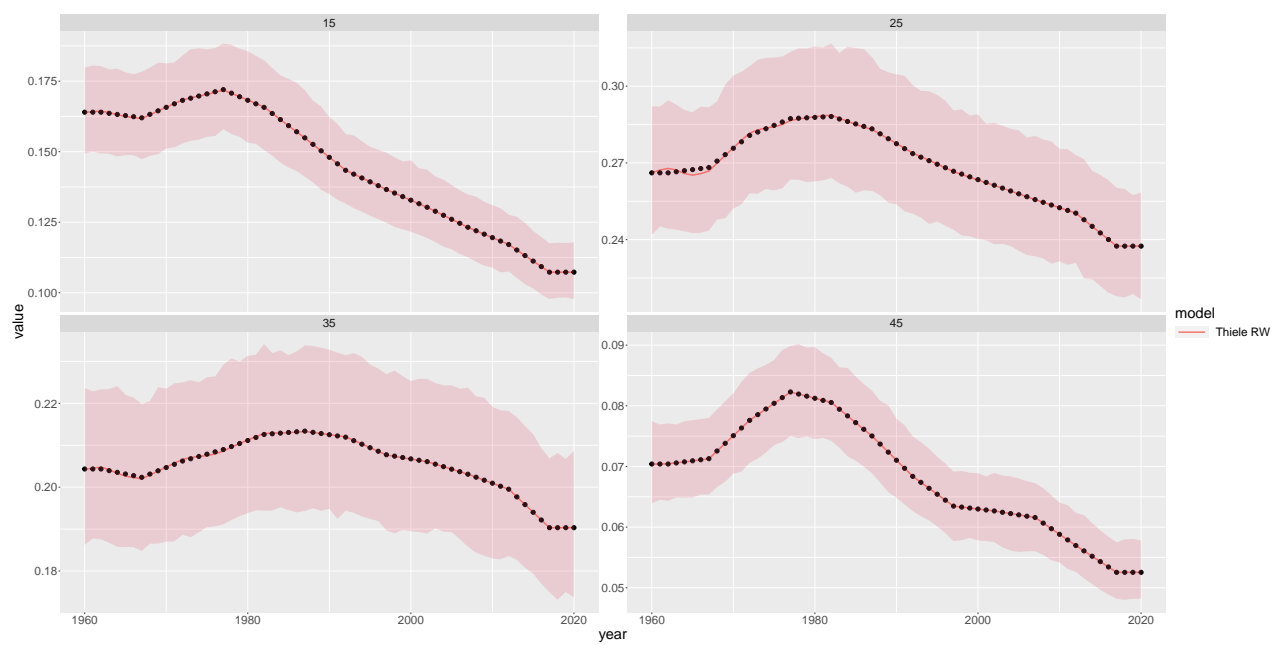


Figure 21: Fertility