Angola

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

```
## # A tibble: 87 x 2
##      age  `2014`
##    <dbl>   <dbl>
##  1     0 438929
##  2     1 529096.
##  3     2 512564
##  4     3 503159.
##  5     4 482890.
##  6     5 467691.
##  7     6 444757.
##  8     7 420007.
##  9     8 395598
## 10     9 371973.
## # ... with 77 more rows
```

```
## [1] "Census Males"
```

```
## # A tibble: 87 x 2
##      age  `2014`
##    <dbl>   <dbl>
##  1     0 435201
##  2     1 523750.
##  3     2 506322.
##  4     3 496824.
##  5     4 476364.
##  6     5 461347.
##  7     6 438334.
##  8     7 412996.
##  9     8 388362.
## 10     9 364539.
## # ... with 77 more rows
```

Thiele log-Normal Hump Spline

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

```
##           log_tau2_logpop_f           log_tau2_logpop_f
##                   5.3164540                   4.1571053
##           log_tau2_logpop_m           log_tau2_logpop_m
##                   5.3289601                   4.1711886
##                log_tau2_fx                log_tau2_gx_f
##                   4.7988444                   3.7624582
##               log_tau2_gx_m         log_lambda_gx_age_f
##                   3.6723612                   7.6572342
##         log_lambda_gx_age_m        log_lambda_gx_time_f
##                   7.8027012                   7.4980528
##        log_lambda_gx_time_m     log_lambda_gx_agetime_f
##                   7.5786271                   7.3225042
##     log_lambda_gx_agetime_m                log_lambda_tp
##                   6.9077579                   2.4834817
```

```
## log_lambda_tp_0_inflated_sd          log_dispersion_f
##                   0.6198622                 0.1434709
##           log_dispersion_m     log_marginal_prec_phi_f
##                   0.3120038                 4.3404308
##     log_marginal_prec_psi_f       log_marginal_prec_A_f
##                   4.3173346                 6.7933779
##       log_marginal_prec_B_f     log_marginal_prec_phi_m
##                   6.6869692                 4.3638523
##     log_marginal_prec_psi_m       log_marginal_prec_A_m
##                   4.3188486                 6.8154824
##       log_marginal_prec_B_m           log_lambda_phi_f
##                   6.9234302                 4.3313841
##           log_lambda_psi_f         log_lambda_lambda_f
##                   4.3183244                 4.4633137
##          log_lambda_delta_f       log_lambda_epsilon_f
##                   4.6047657                 4.6368061
##             log_lambda_A_f             log_lambda_B_f
##                   4.3062472                 4.2997146
##           log_lambda_phi_m           log_lambda_psi_m
##                   4.3510404                 4.3264146
##         log_lambda_lambda_m         log_lambda_delta_m
##                   4.3847275                 3.5845511
##       log_lambda_epsilon_m             log_lambda_A_m
##                   4.5253056                 4.3072125
##             log_lambda_B_m
##                   4.3121486
```

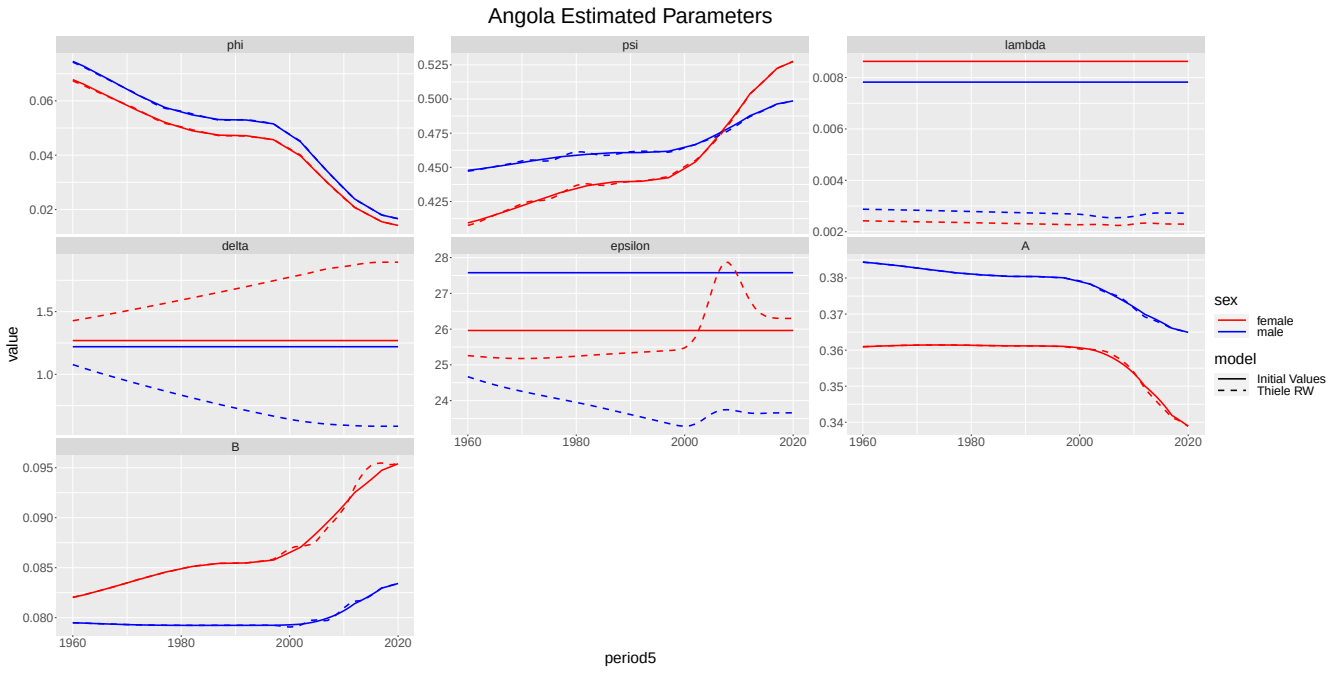

Figure 1: Estimated parameters

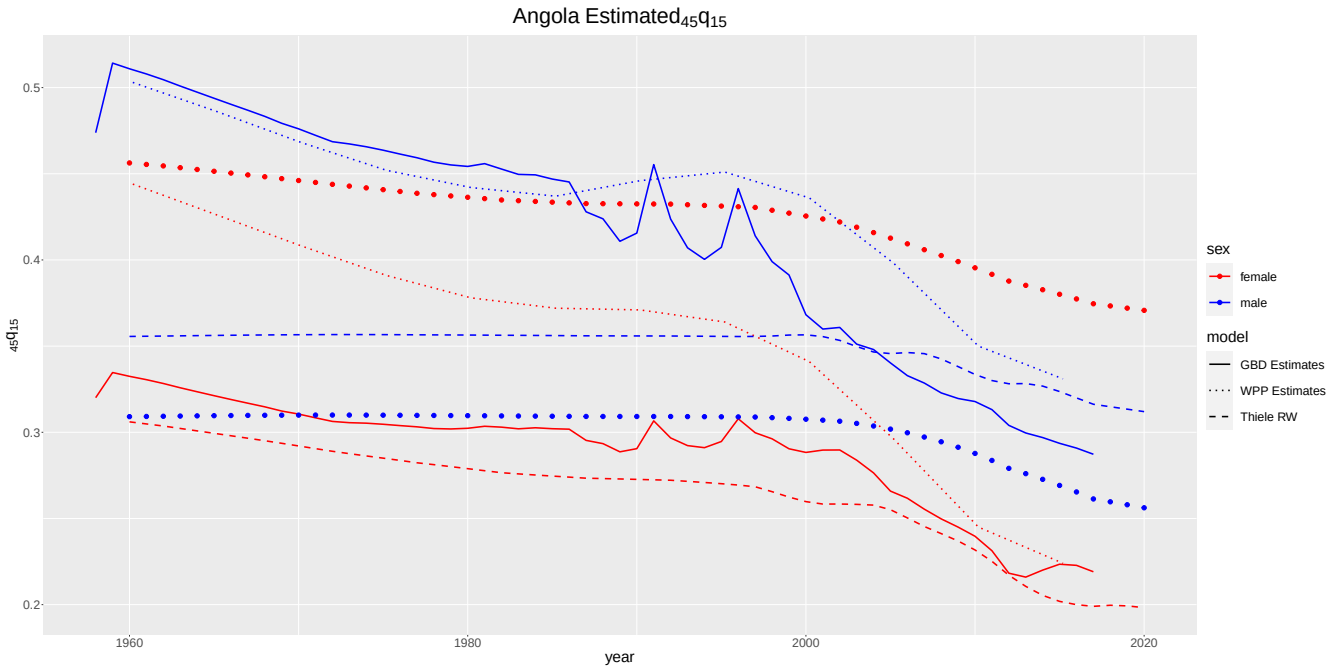

Figure 2: Estimated ${}_{45}q_{15}$

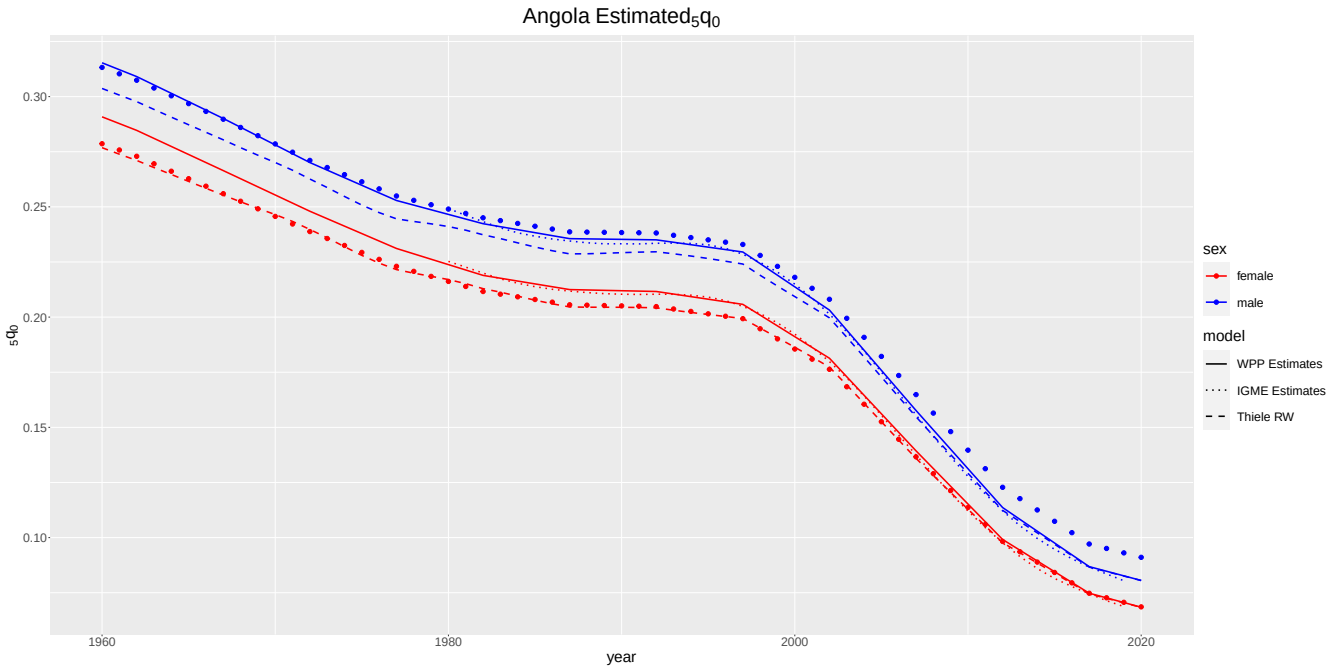

Figure 3: Estimated $_5q_0$

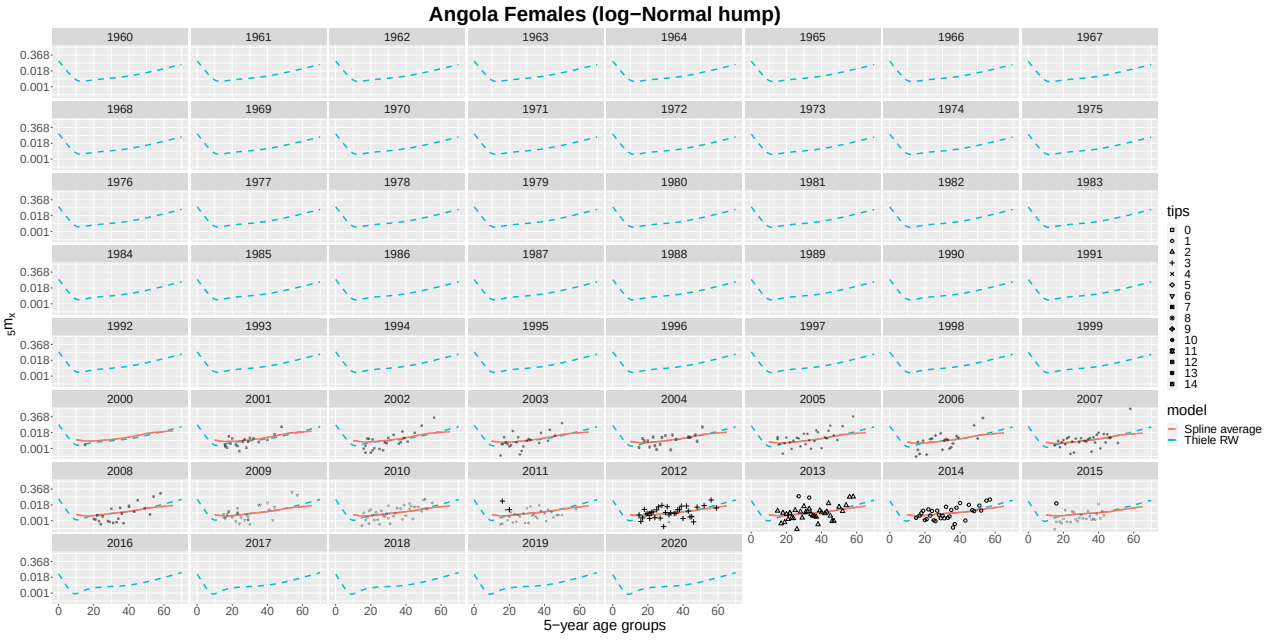

Figure 4: Mortality Schedules

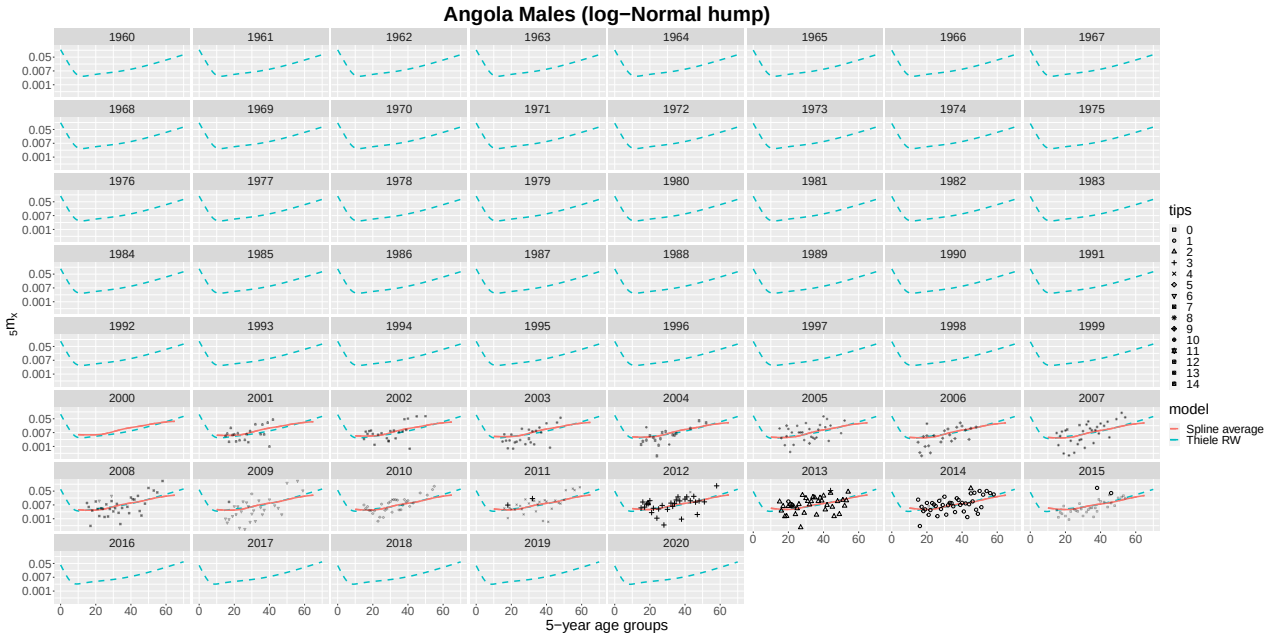

Figure 5: Mortality Schedules

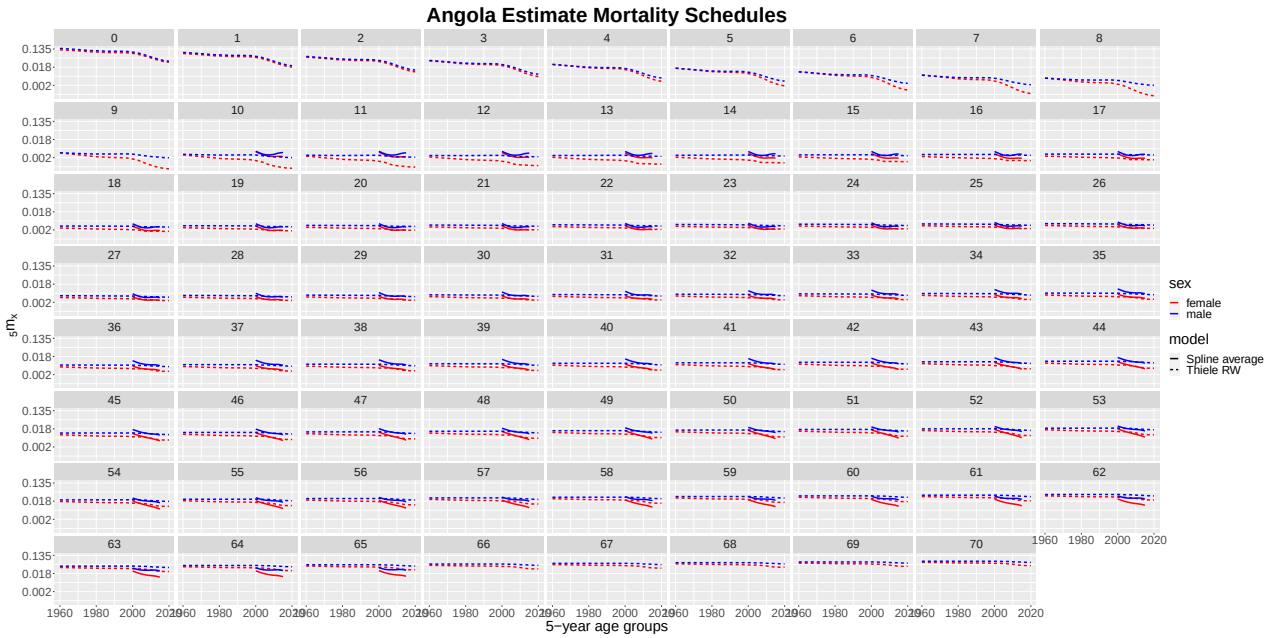

Figure 6: Mortality Schedules

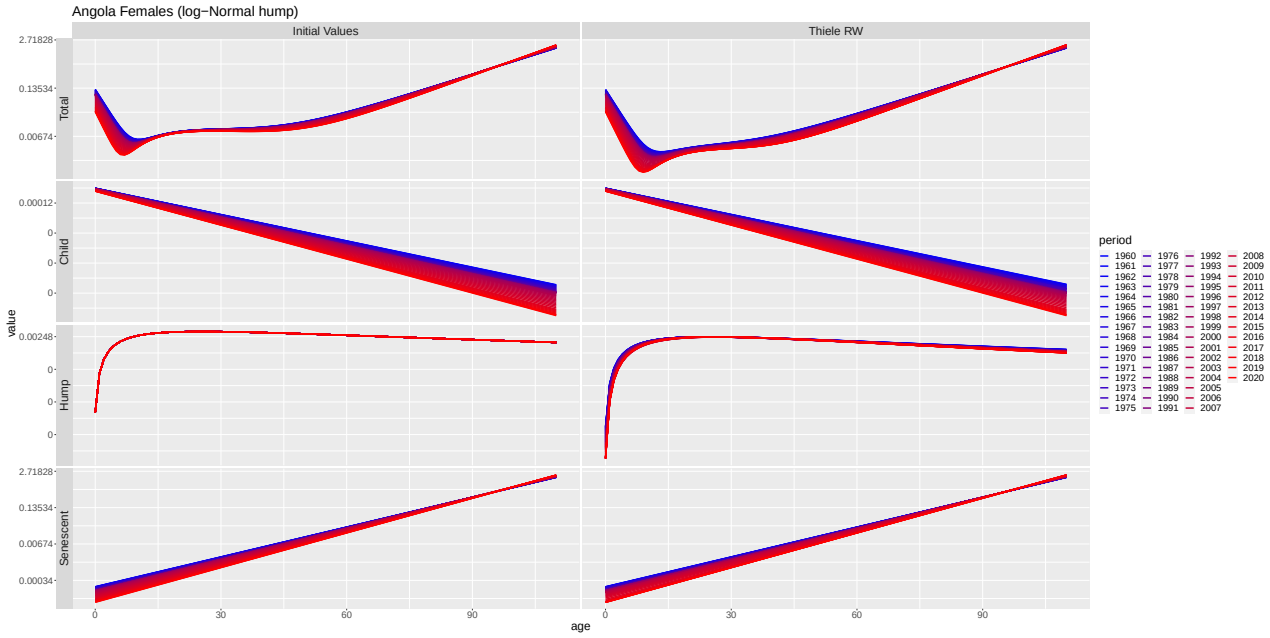

Figure 7: Thiele Decomposed

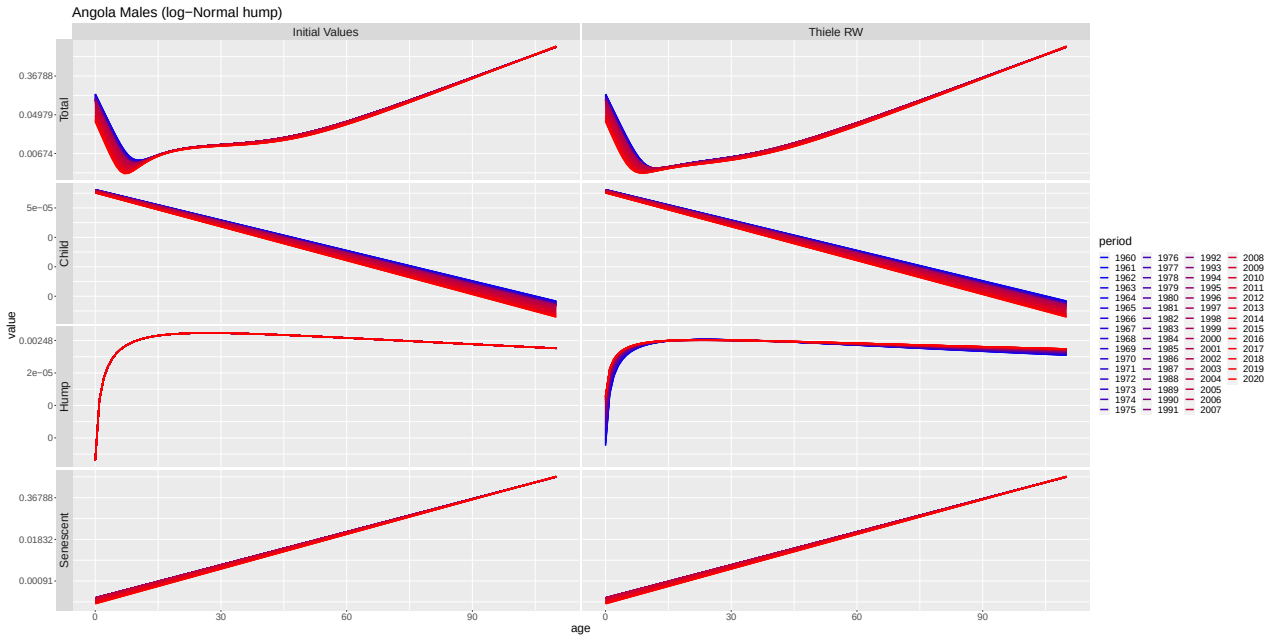

Figure 8: Thiele Decomposed

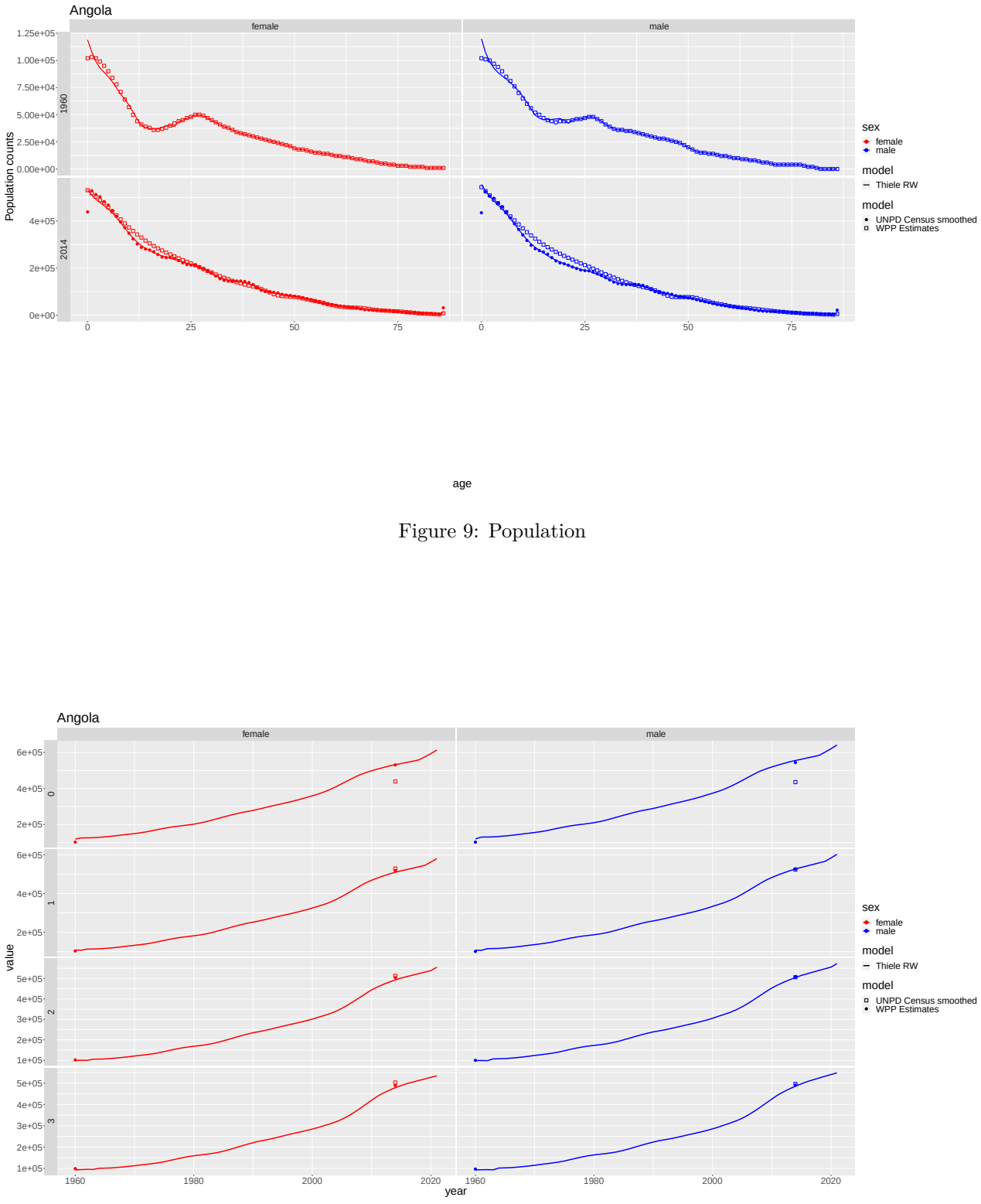

Figure 9: Population

Figure 10: Population

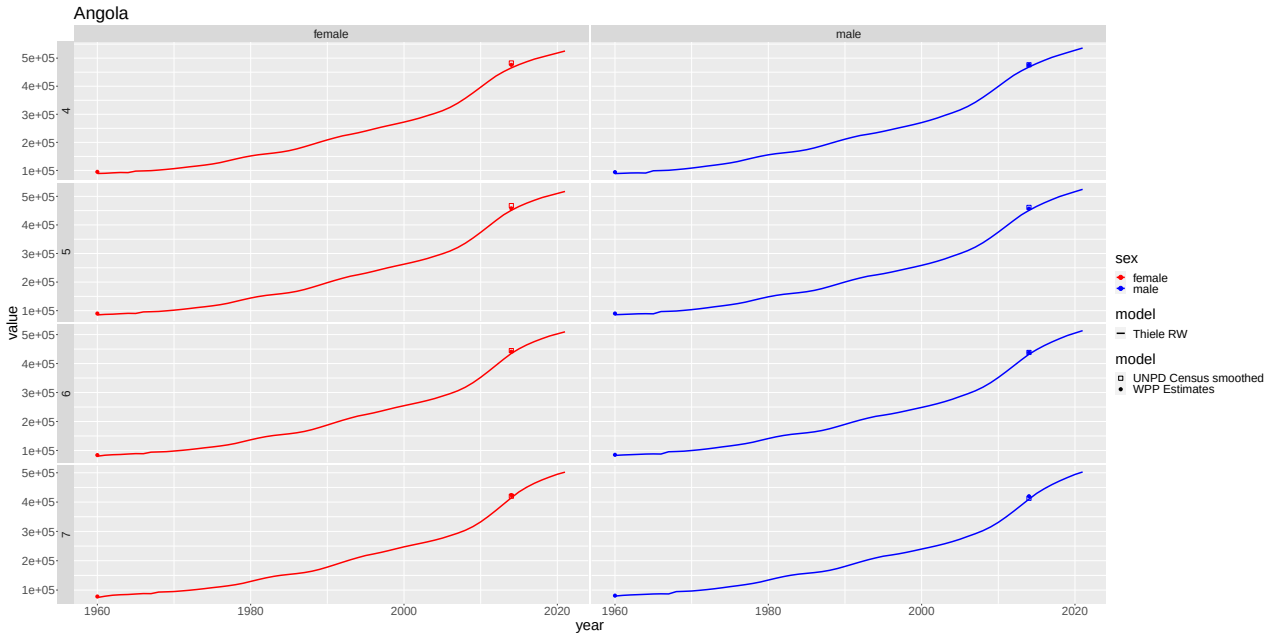

Figure 11: Population

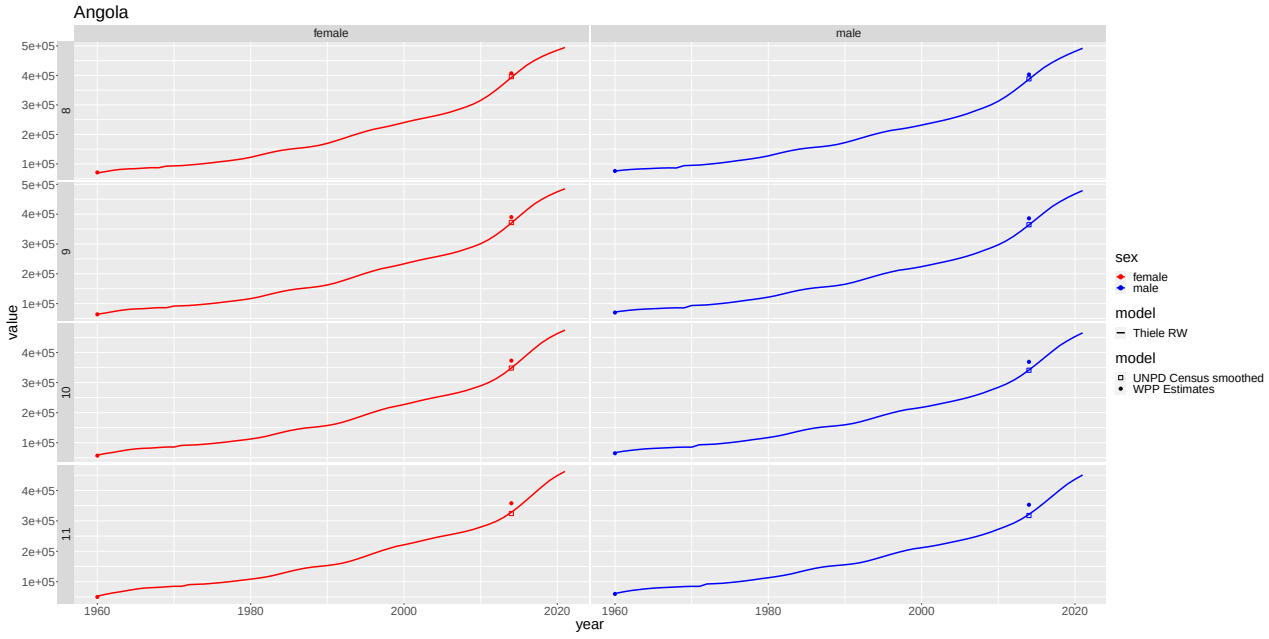

Figure 12: Population

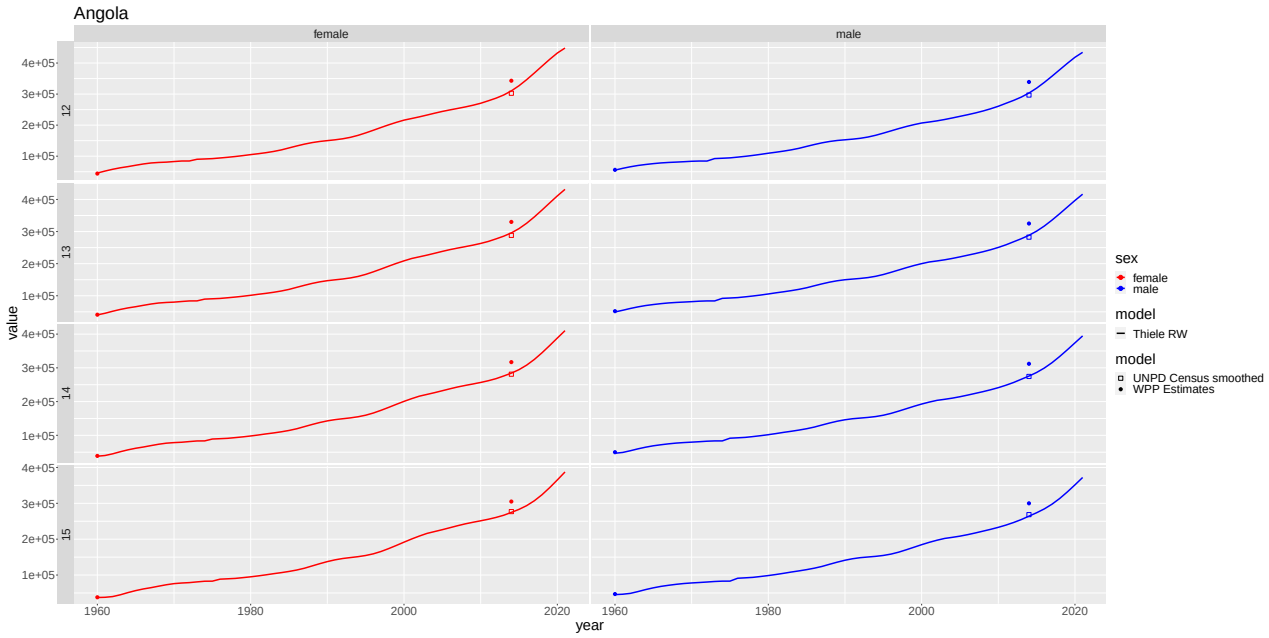

Figure 13: Population

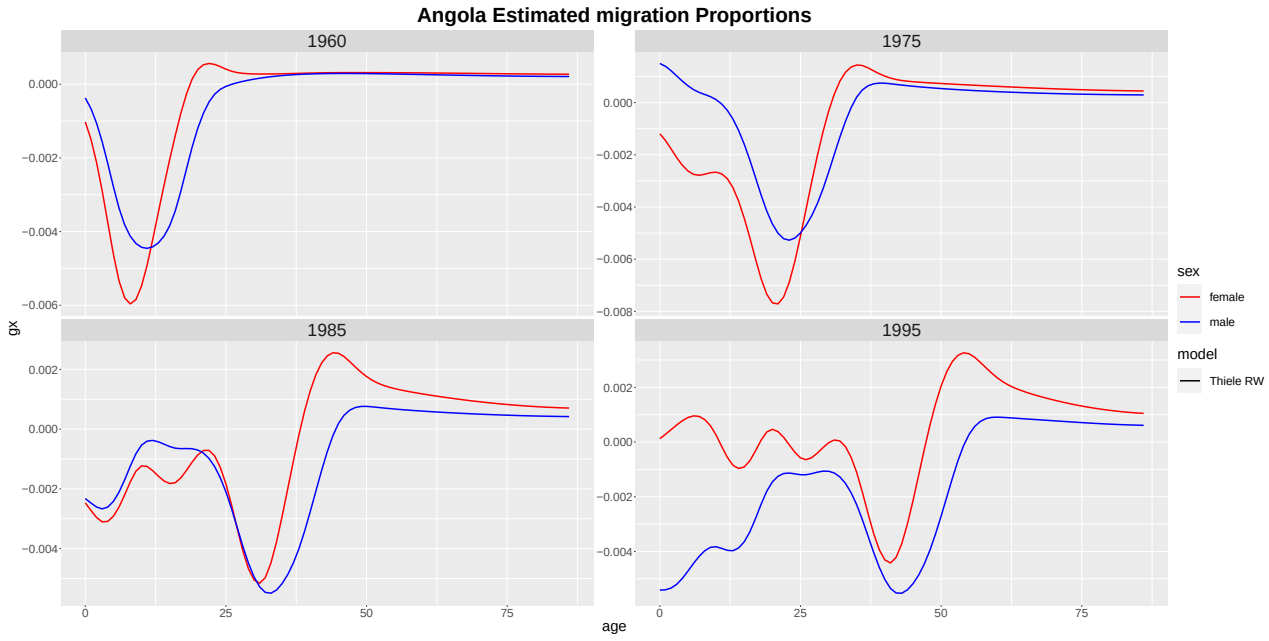

Figure 14: Migration

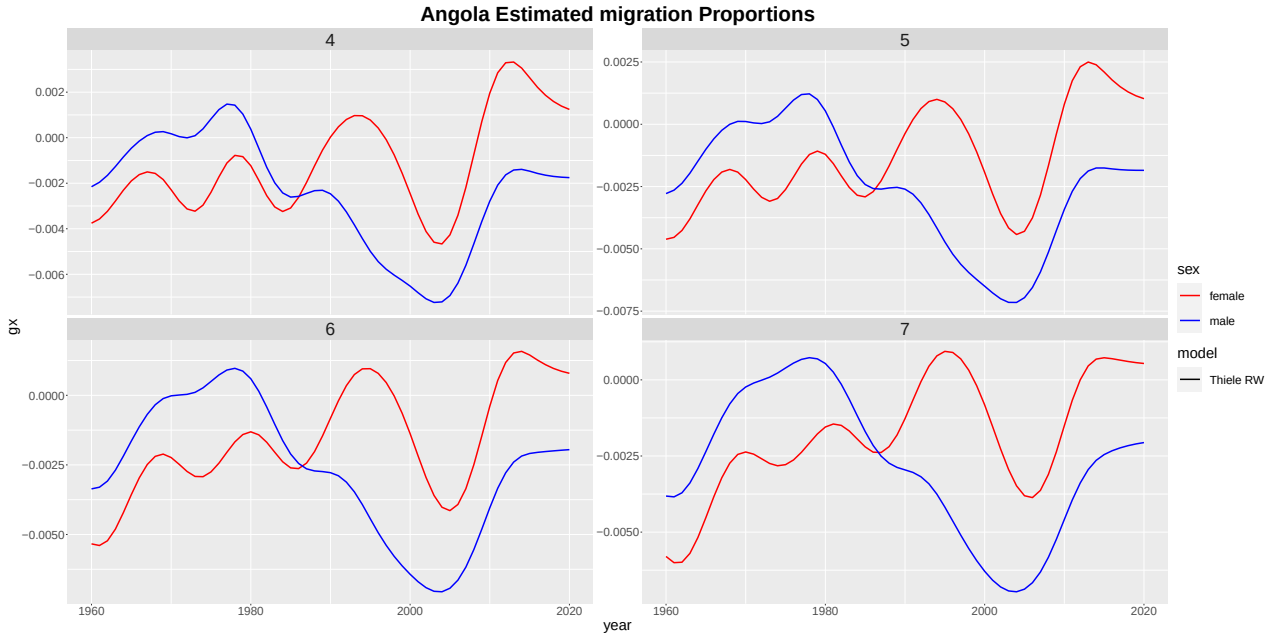

Figure 15: Migration

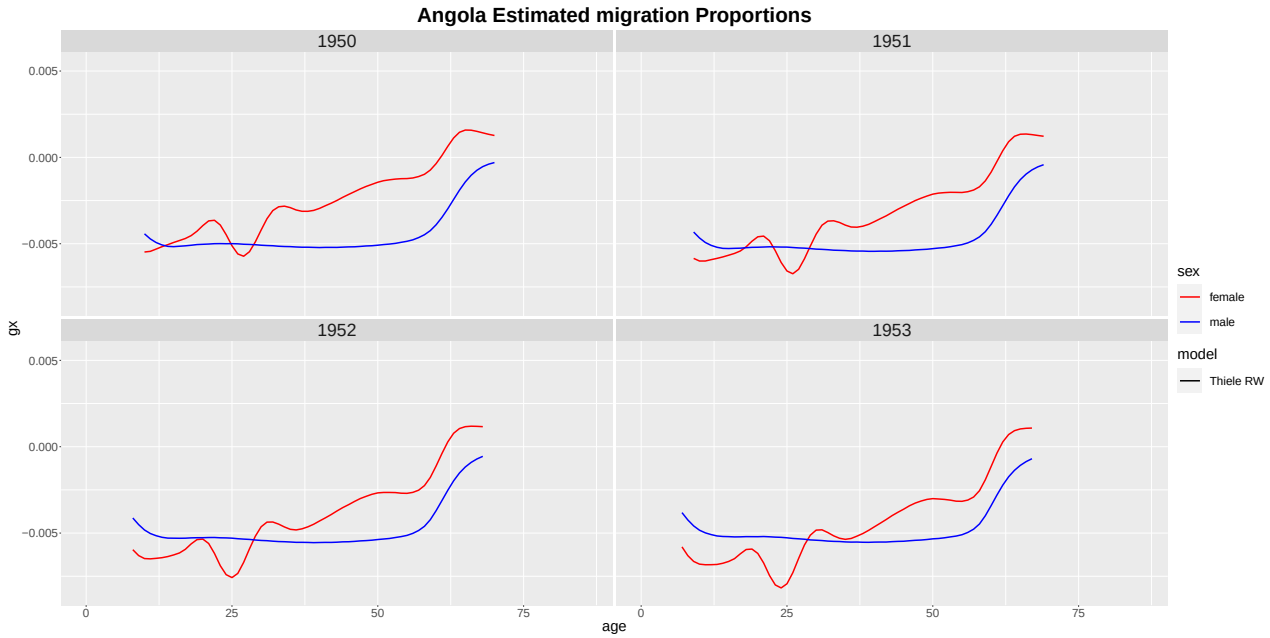

Figure 16: Migration

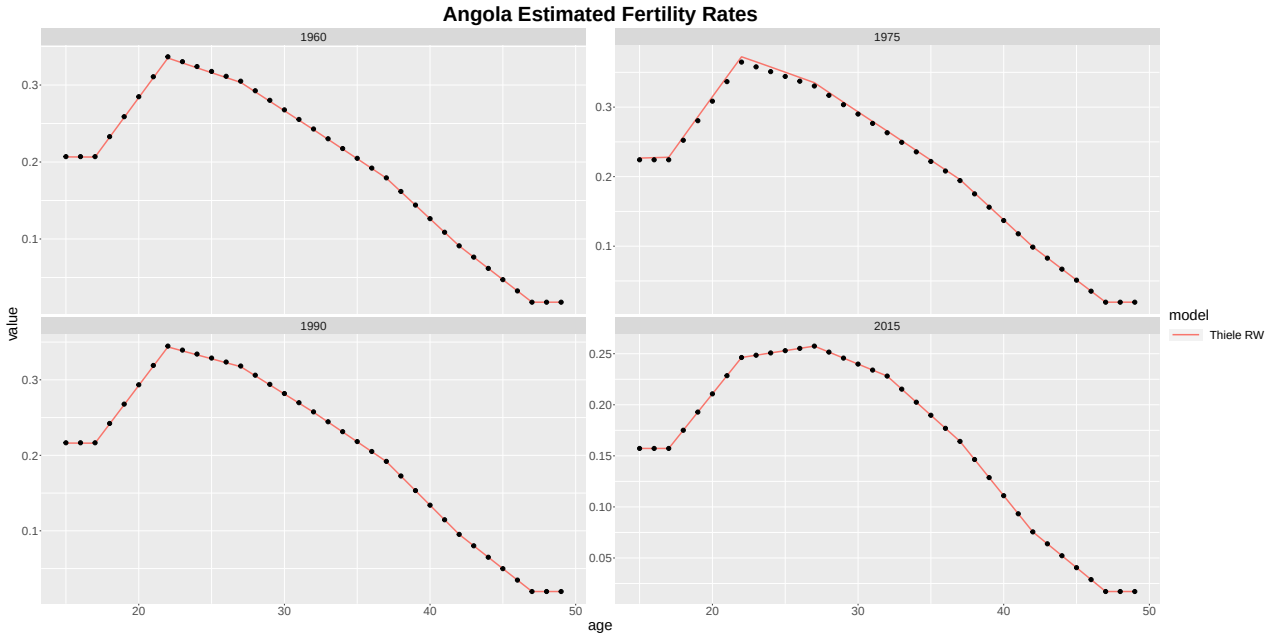

Figure 17: Fertility

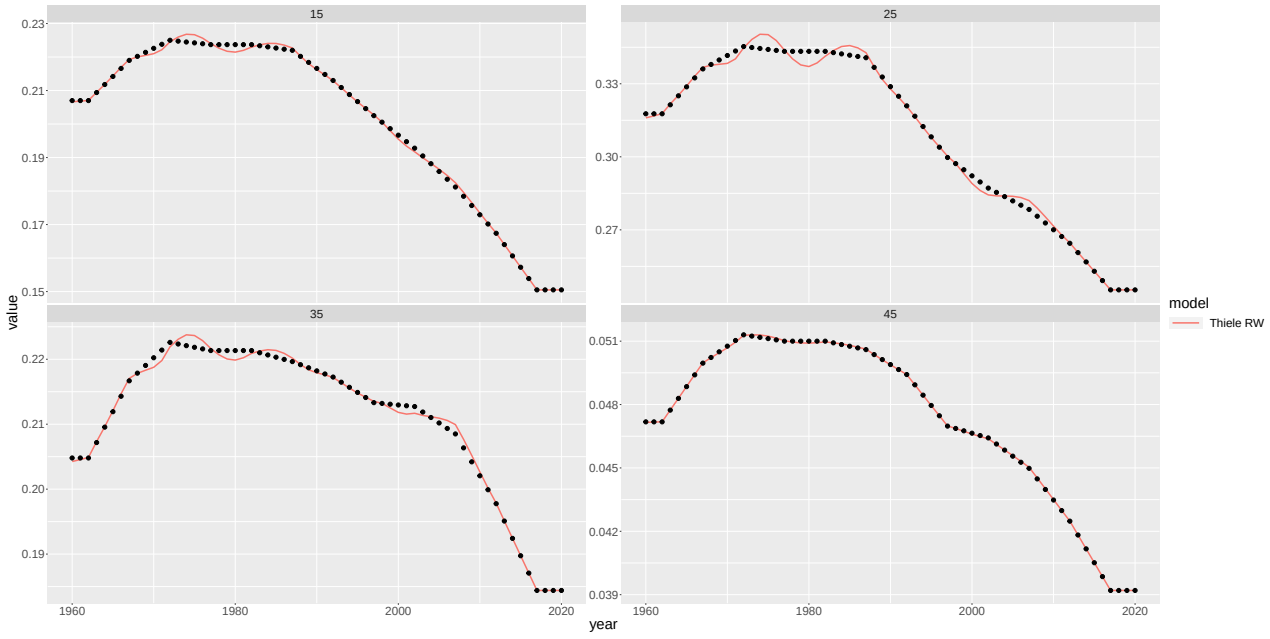

Figure 18: Fertility

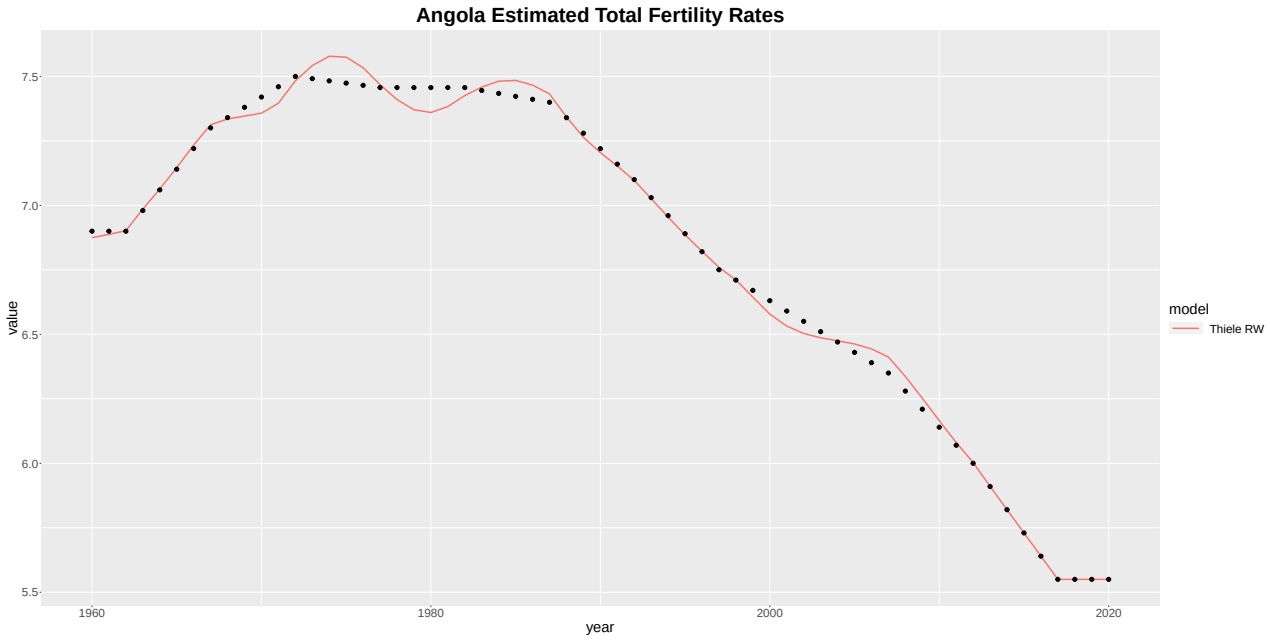

Figure 19: Total Fertility