

Tanzania

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

## # A tibble: 81 x 3
##   age `1988` `2012`
##   <dbl>   <dbl>   <dbl>
## 1     0 421414. 751563.
## 2     1 363583. 708100.
## 3     2 384979. 721738.
## 4     3 390569. 718712.
## 5     4 383081. 710245.
## 6     5 372368. 691957.
## 7     6 364737. 678372.
## 8     7 358164. 667740.
## 9     8 349101. 655750.
## 10    9 338053. 633738.
## # ... with 71 more rows
```

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

## # A tibble: 81 x 3
##   age `1988` `2012`
##   <dbl>   <dbl>   <dbl>
## 1     0 416380. 747826.
## 2     1 360734. 710793.
## 3     2 379475. 722953.
## 4     3 385481. 722477.
## 5     4 378708. 713688.
## 6     5 369925. 693374.
## 7     6 363121. 679125.
## 8     7 356958. 668165.
## 9     8 348616. 656753.
## 10    9 338404. 634250.
## # ... with 71 more rows
```

Thiele log-Normal Hump Spline

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

##	log_tau2_logpop_f	log_tau2_logpop_f	log_tau2_logpop_m	log_tau2_logpop_m
##	5.9474383	4.8722477	5.9925703	4.8722477
##	log_tau2_gx_m	log_lambda_gx_age_f	log_lambda_gx_age_m	log_lambda_gx_age_m
##	3.0594849	8.0994311	7.7272552	8.0994311
##	log_lambda_gx_agemtime_m	log_lambda_tp	log_lambda_tp_0_inflated_sd	log_lambda_tp_0_inflated_sd
##	6.9077629	2.8239007	0.4946236	2.8239007
##	log_marginal_prec_psi_f	log_marginal_prec_A_f	log_marginal_prec_B_f	log_marginal_prec_B_f
##	4.3250785	6.8022237	6.7164039	6.8022237
##	log_marginal_prec_B_m	log_lambda_phi_f	log_lambda_psi_f	log_lambda_psi_f
##	3.9507026	4.3697924	4.3356093	4.3697924
##	log_lambda_A_f	log_lambda_B_f	log_lambda_phi_m	log_lambda_phi_m
##	4.3079501	4.3150160	4.3681331	4.3150160
##	log_lambda_epsilon_m	log_lambda_A_m	log_lambda_B_m	log_lambda_B_m
##	3.7322844	4.3089787	4.6965802	4.3089787

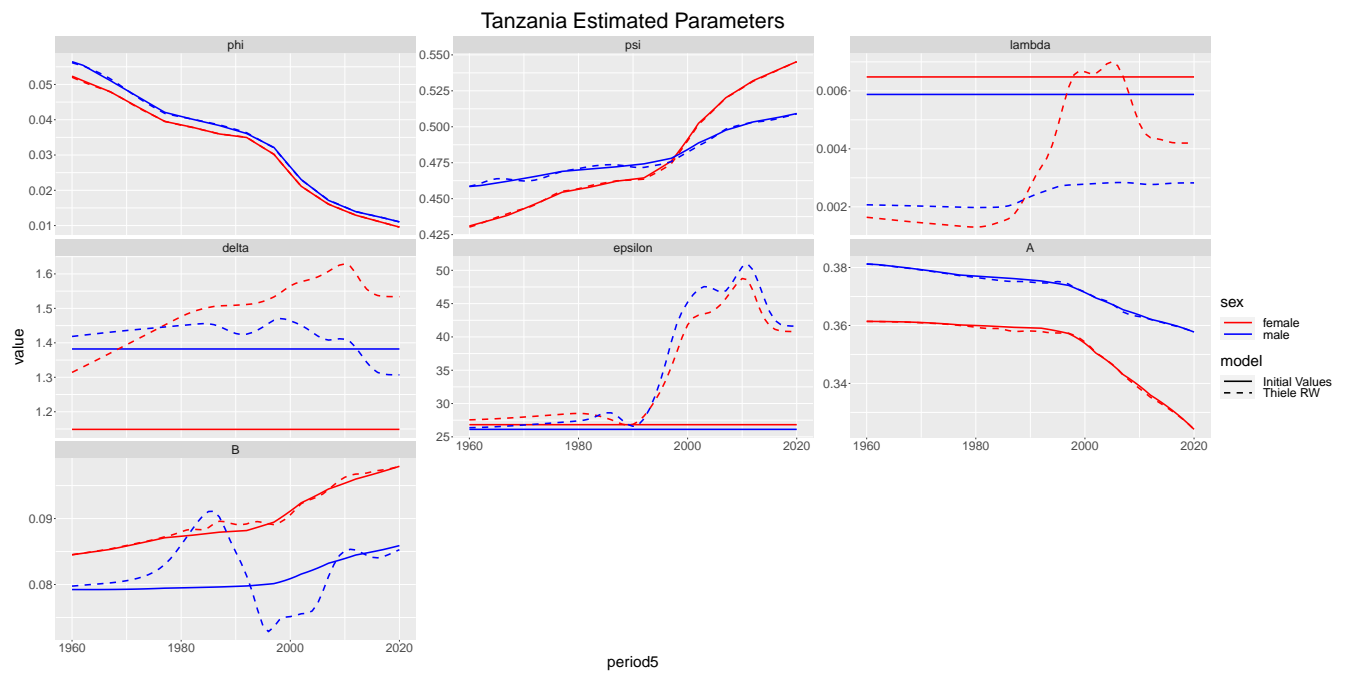


Figure 1: Estimated parameters

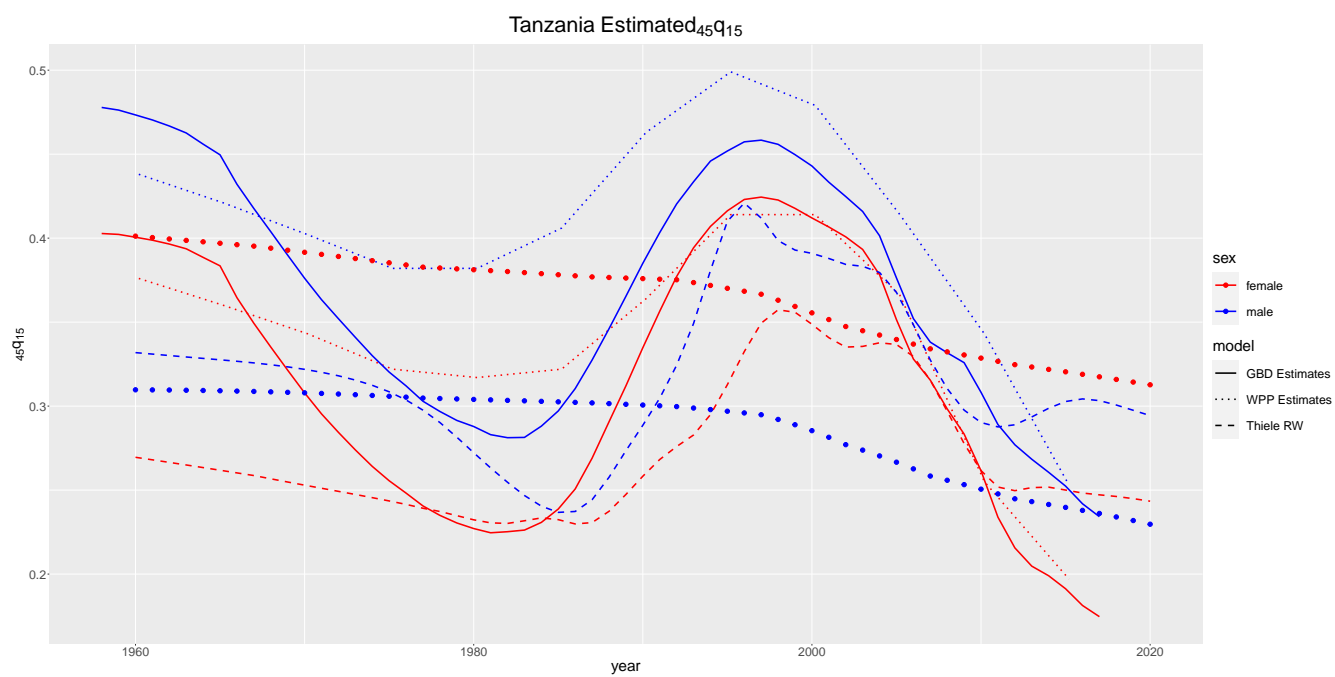


Figure 2: Estimated $_{45}q_{15}$

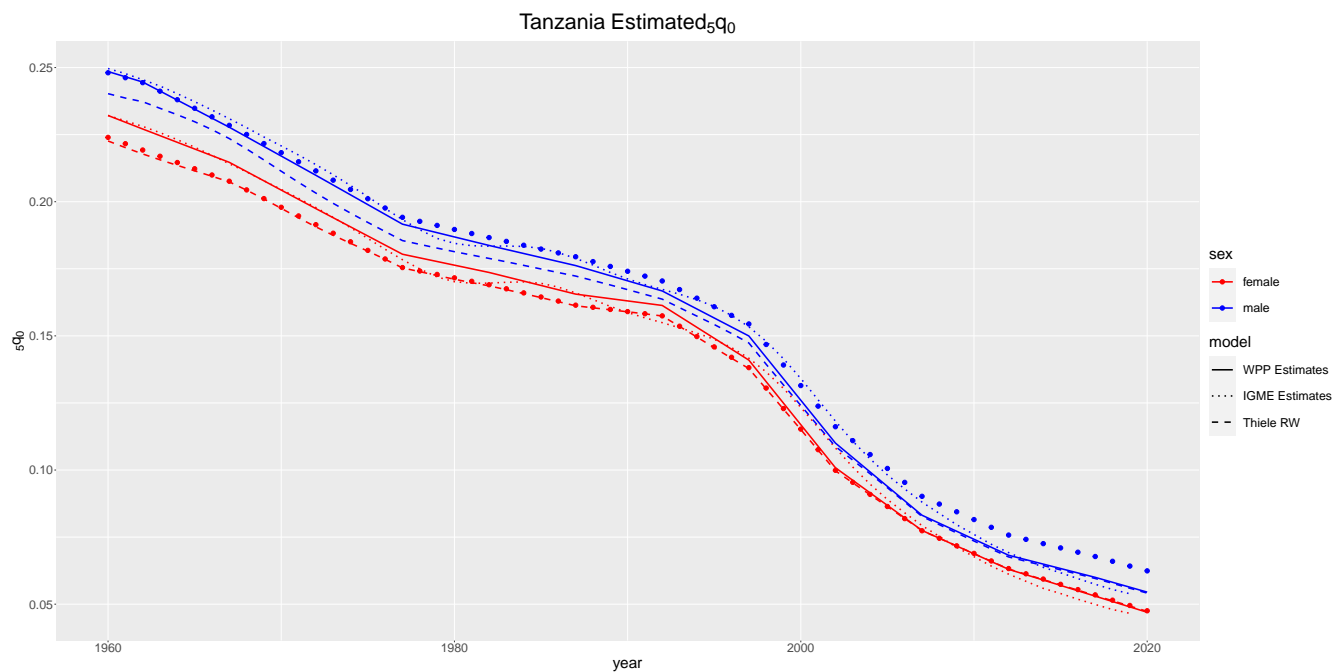


Figure 3: Estimated ${}_5q_0$

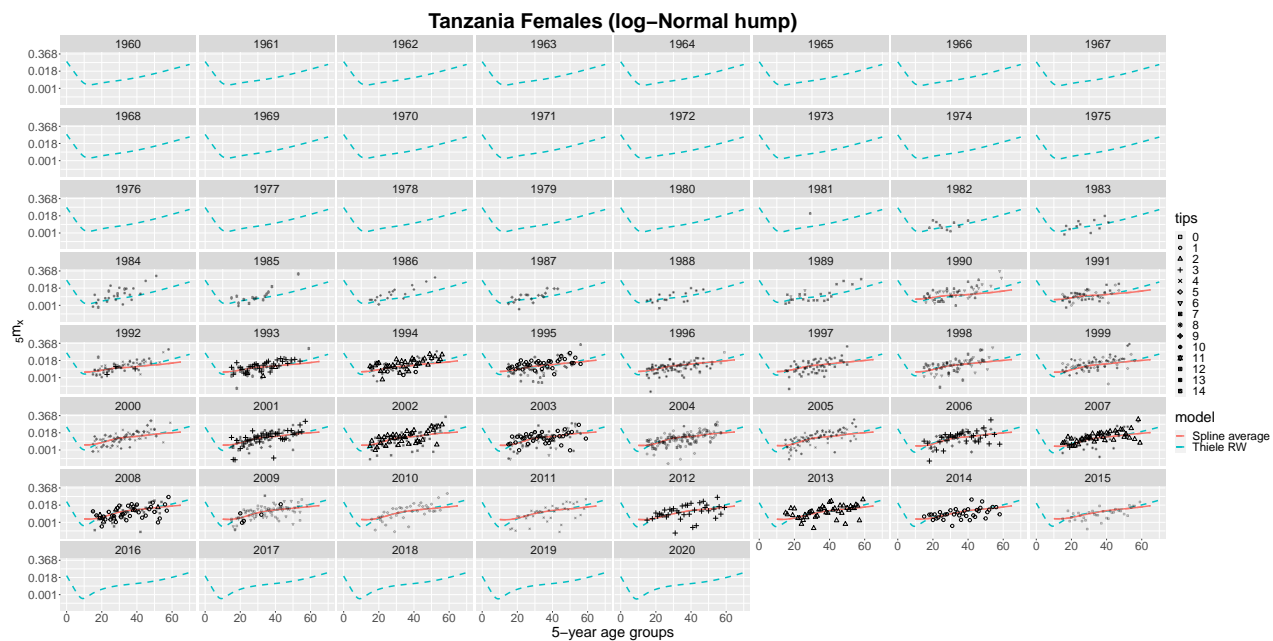


Figure 4: Mortality Schedules

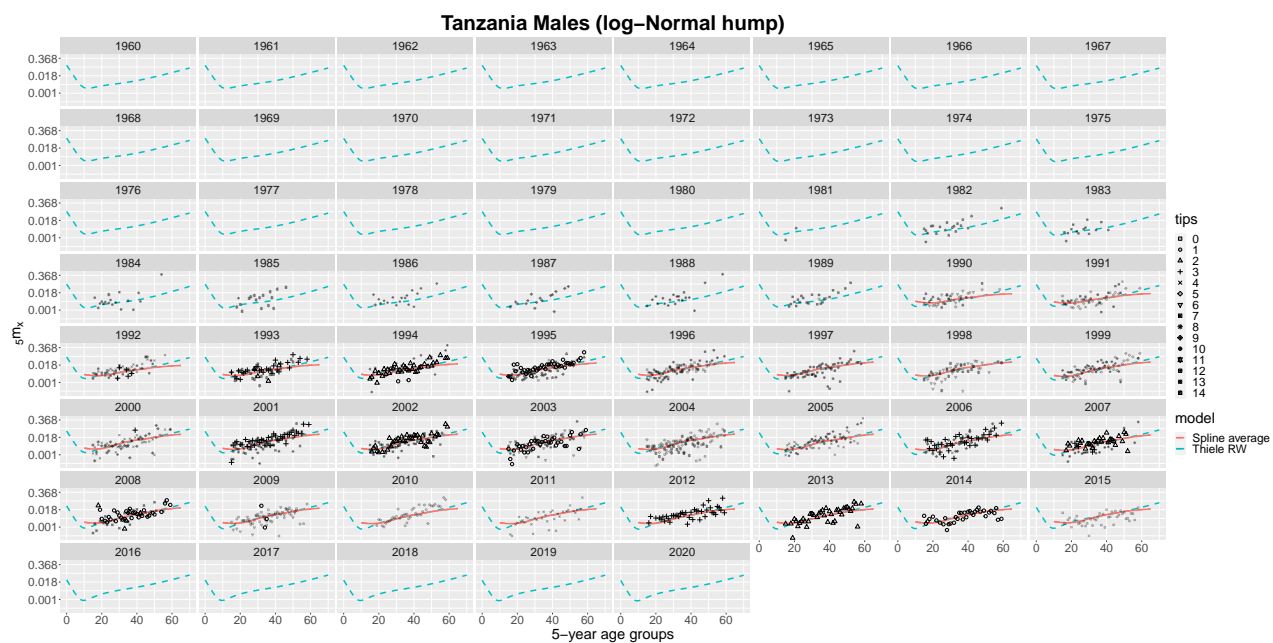


Figure 5: Mortality Schedules

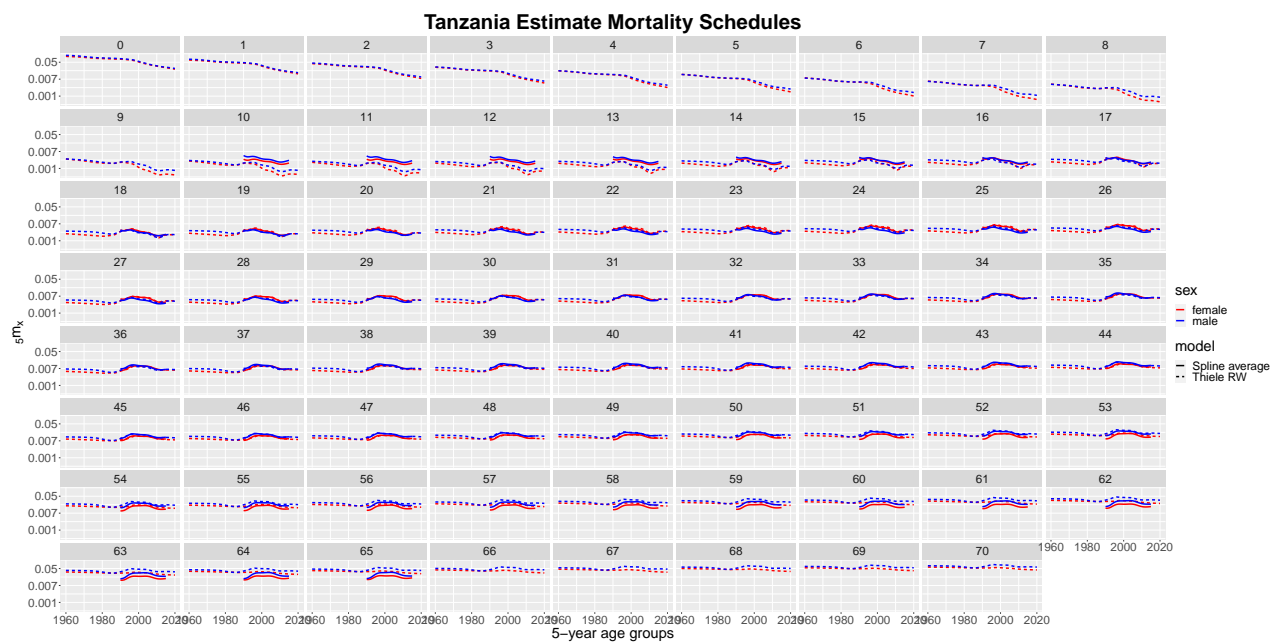


Figure 6: Mortality Schedules

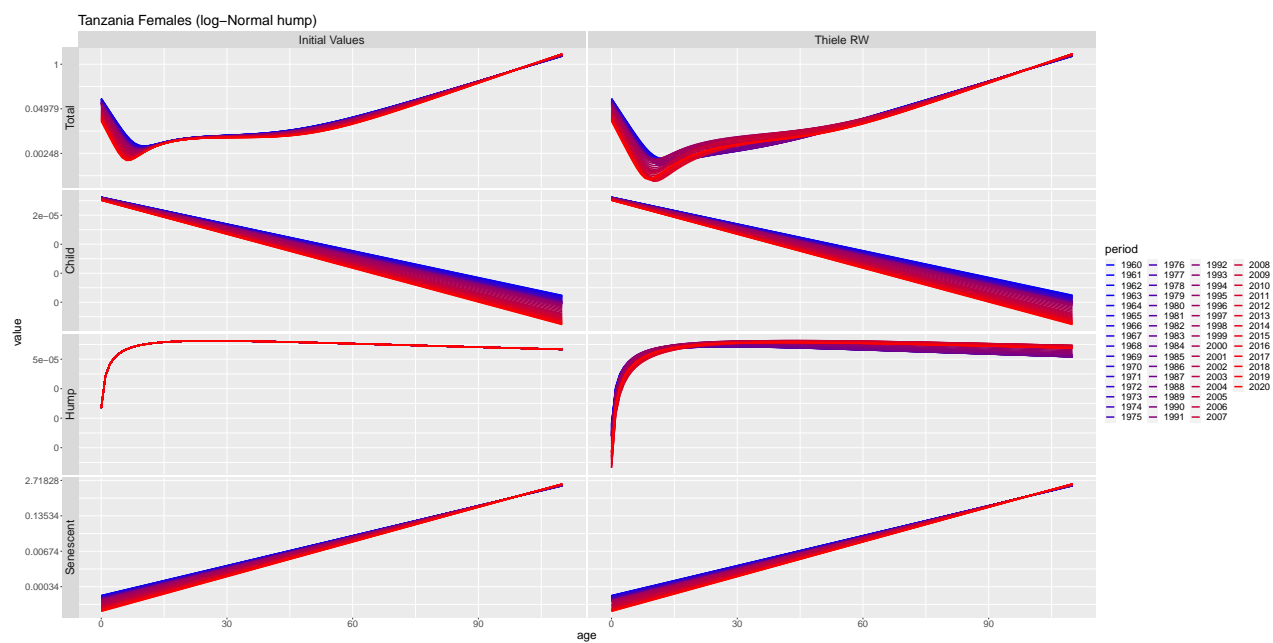


Figure 7: Thiele Decomposed

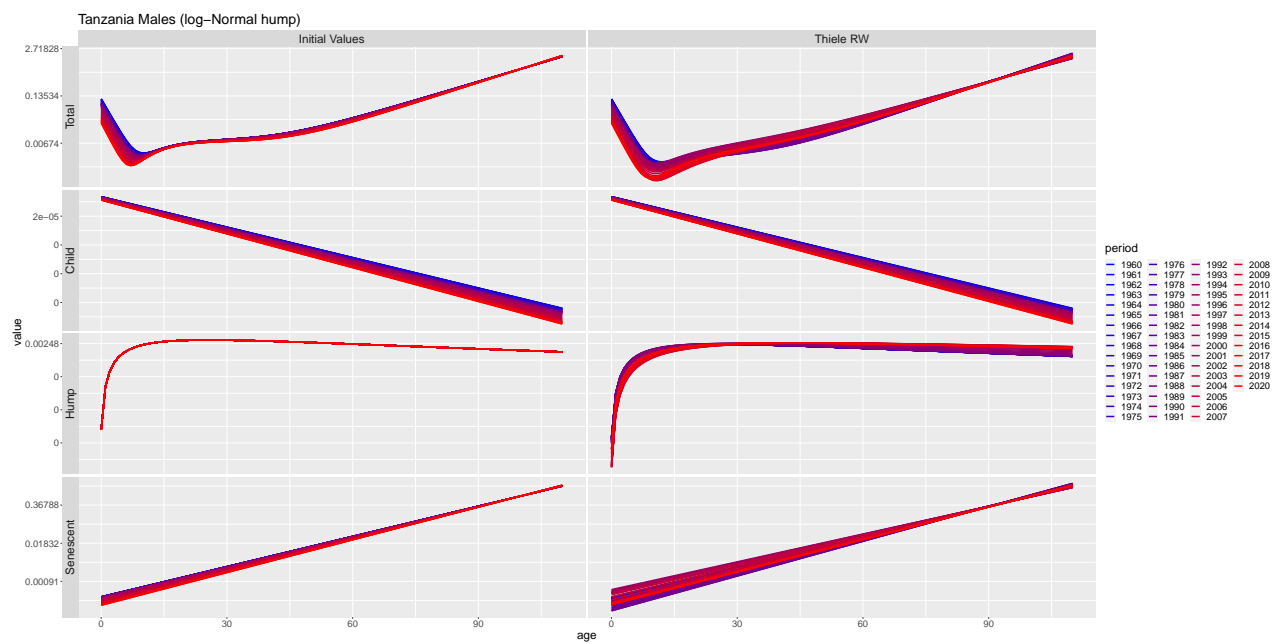


Figure 8: Thiele Decomposed

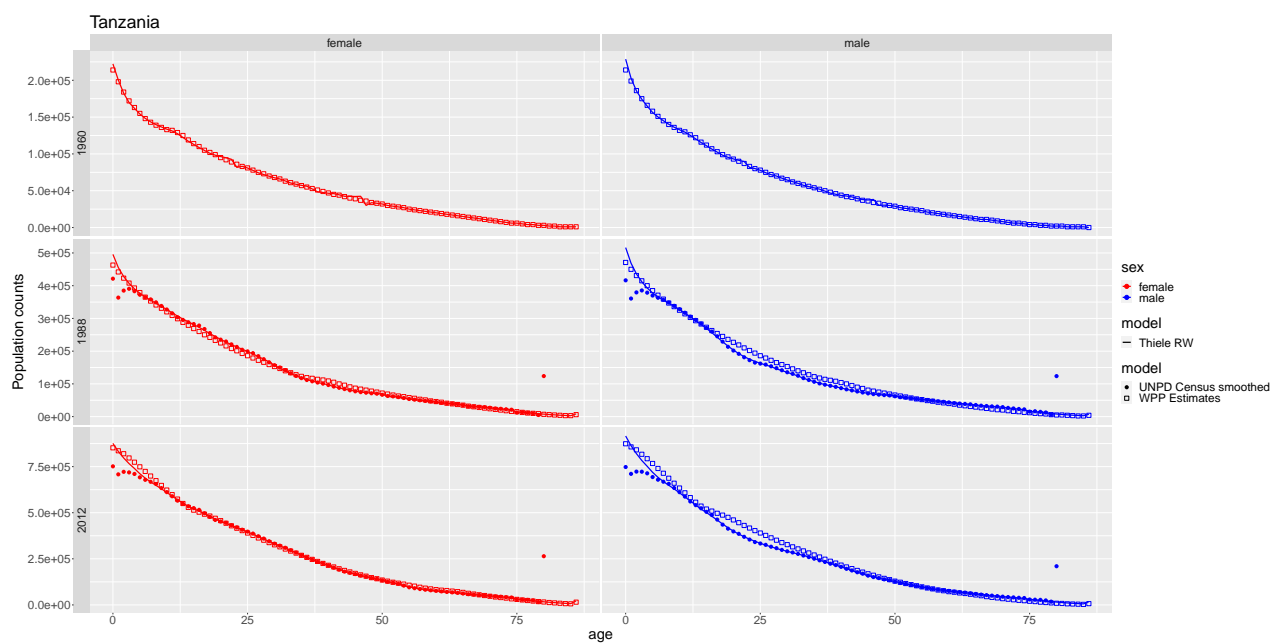


Figure 9: Population

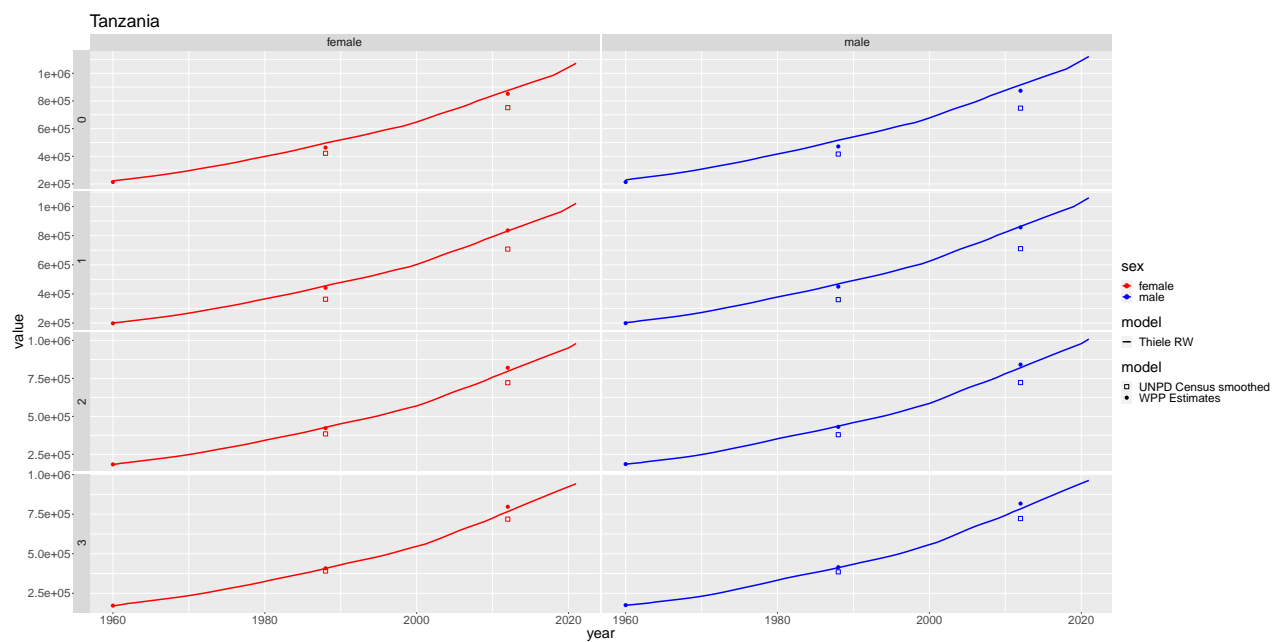


Figure 10: Population

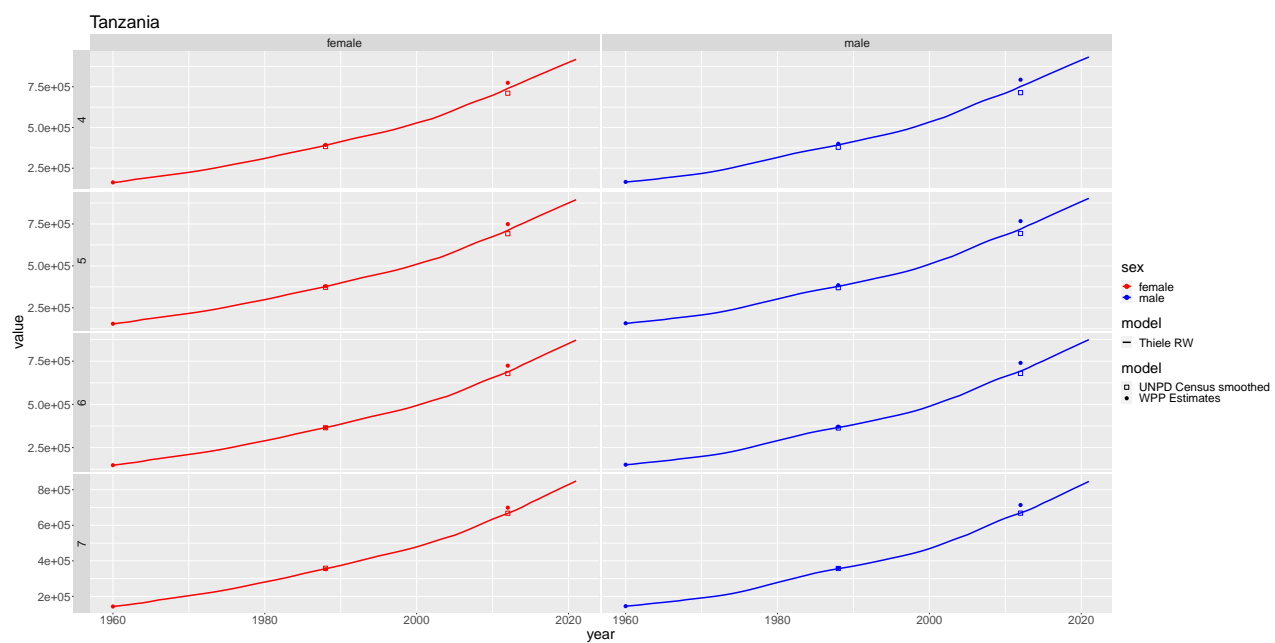


Figure 11: Population

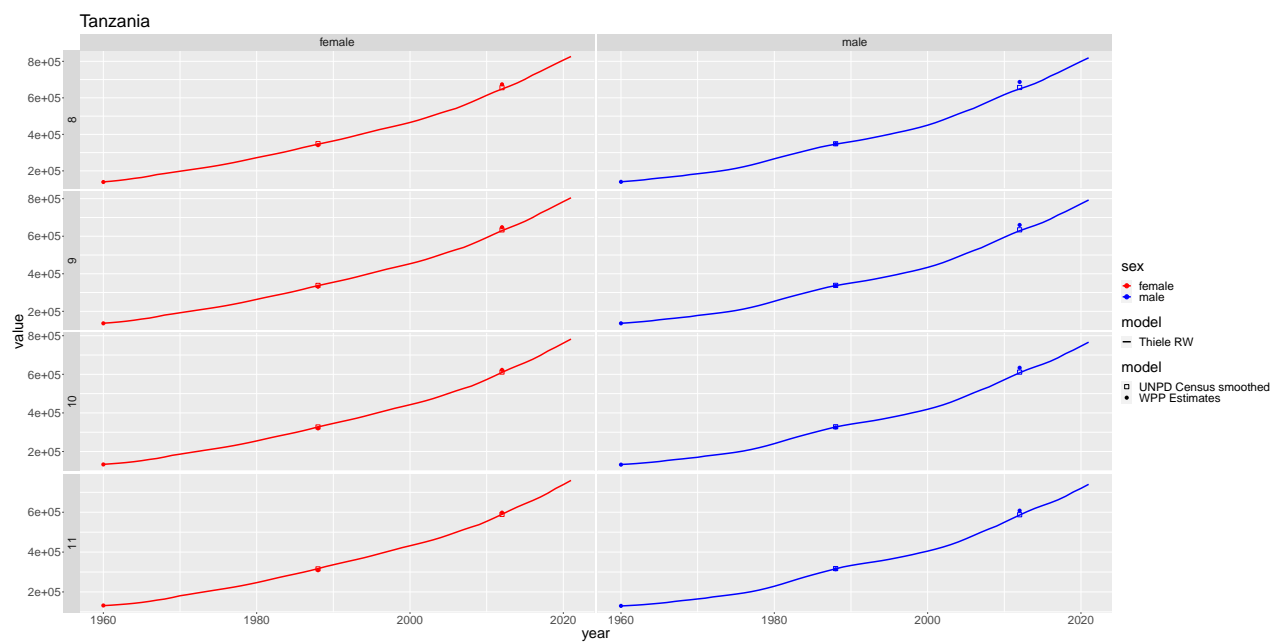


Figure 12: Population

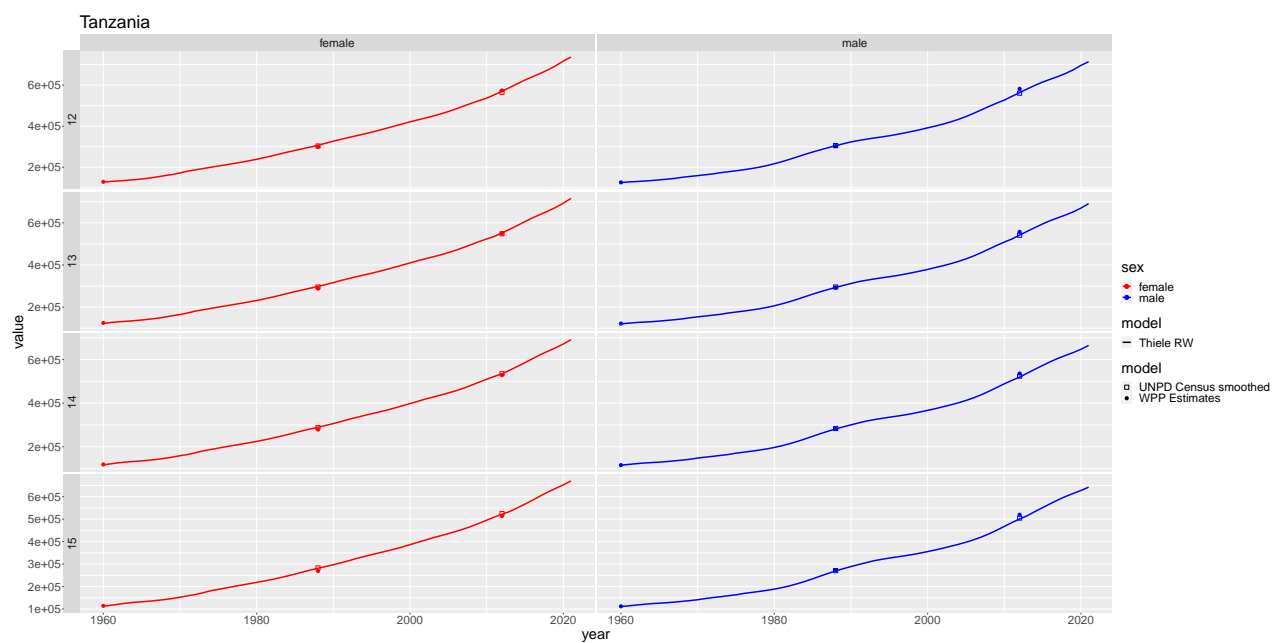


Figure 13: Population

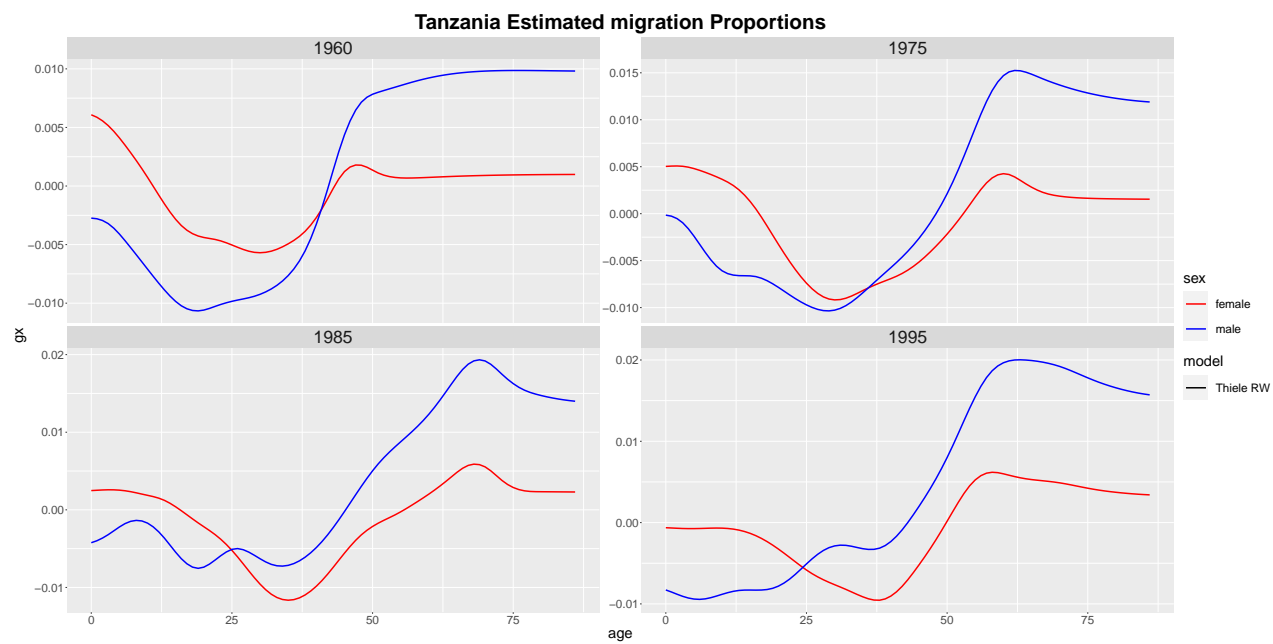


Figure 14: Migration

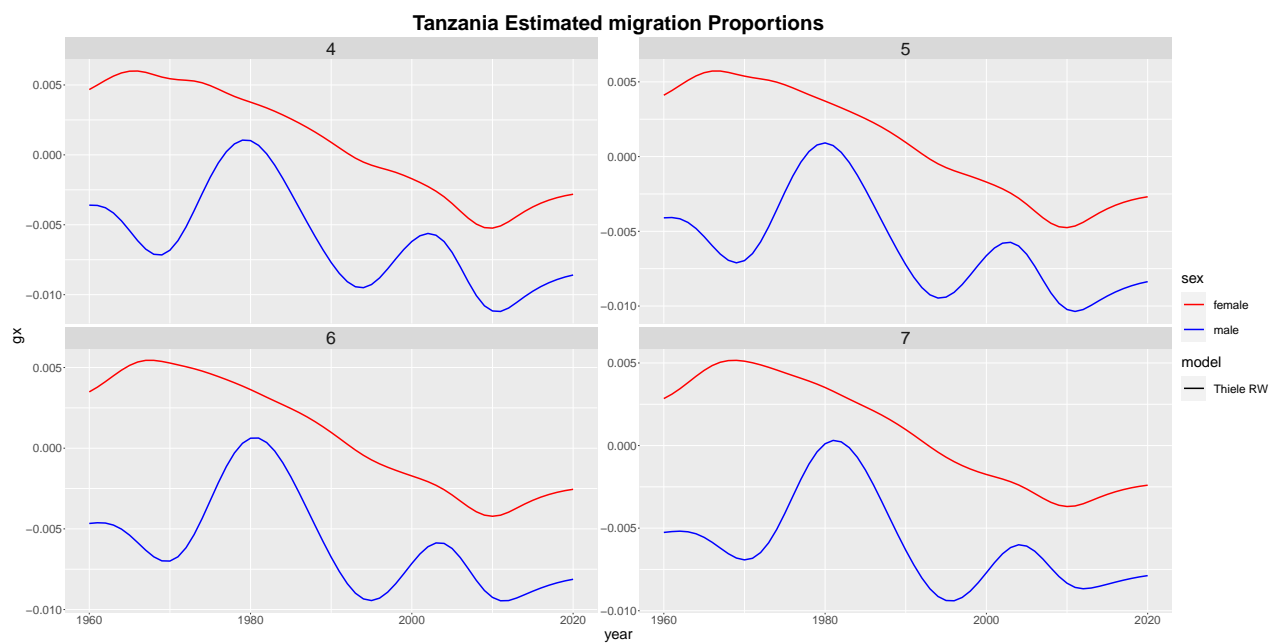


Figure 15: Migration

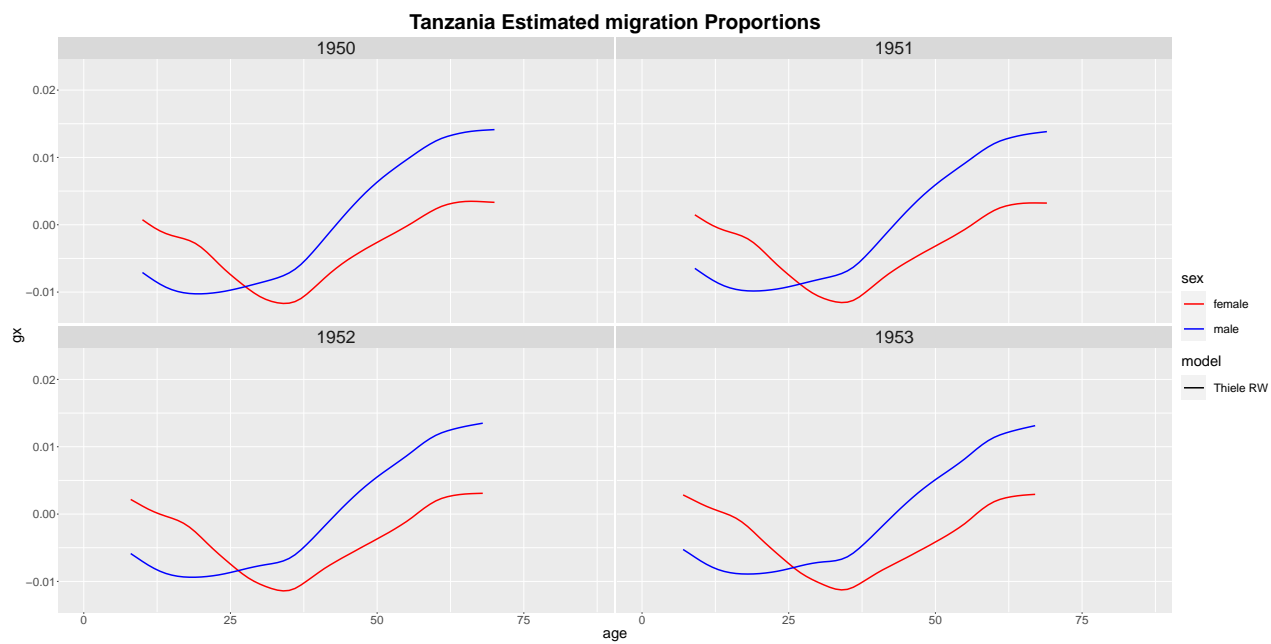


Figure 16: Migration

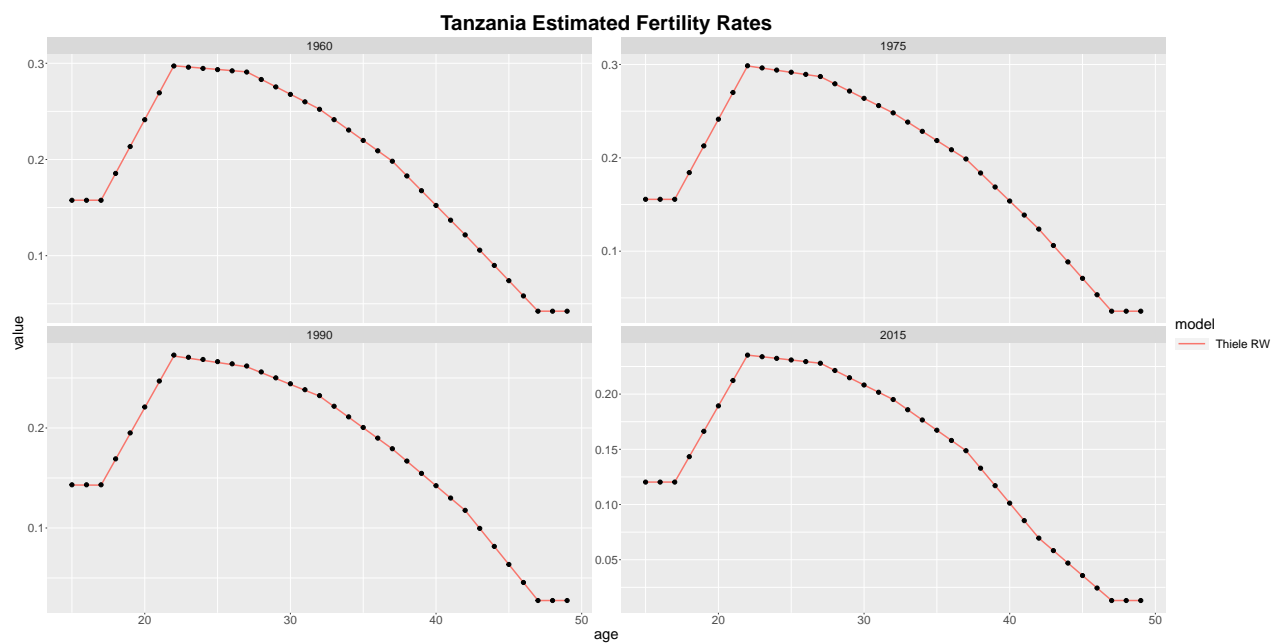


Figure 17: Fertility

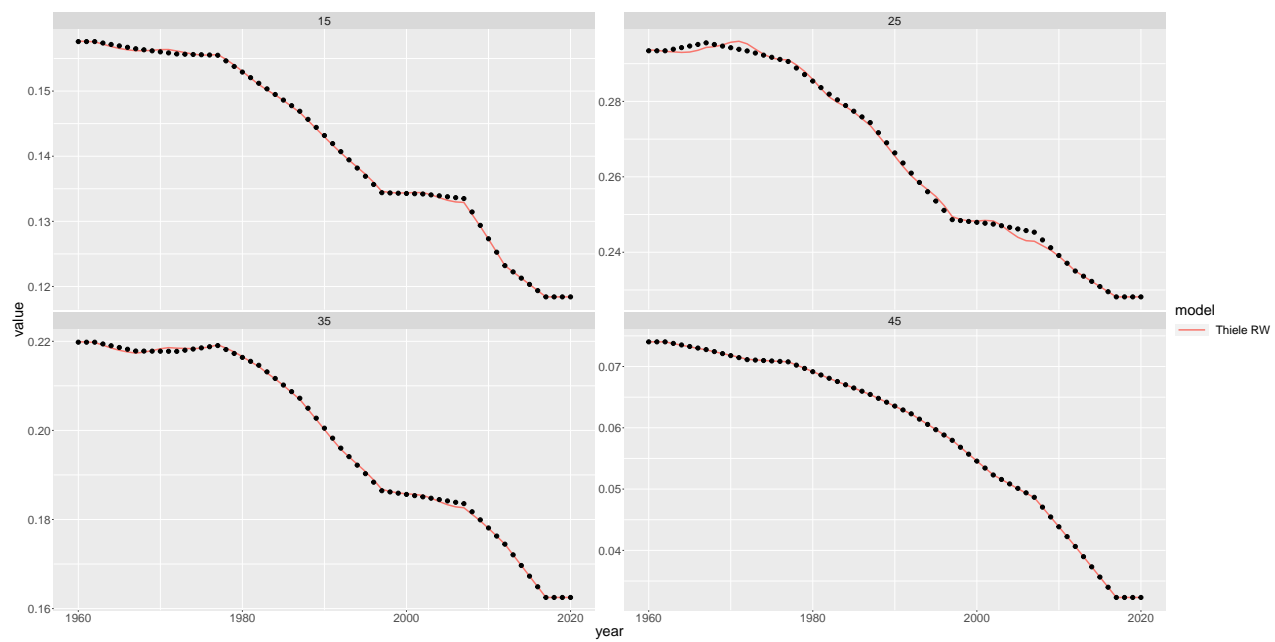


Figure 18: Fertility

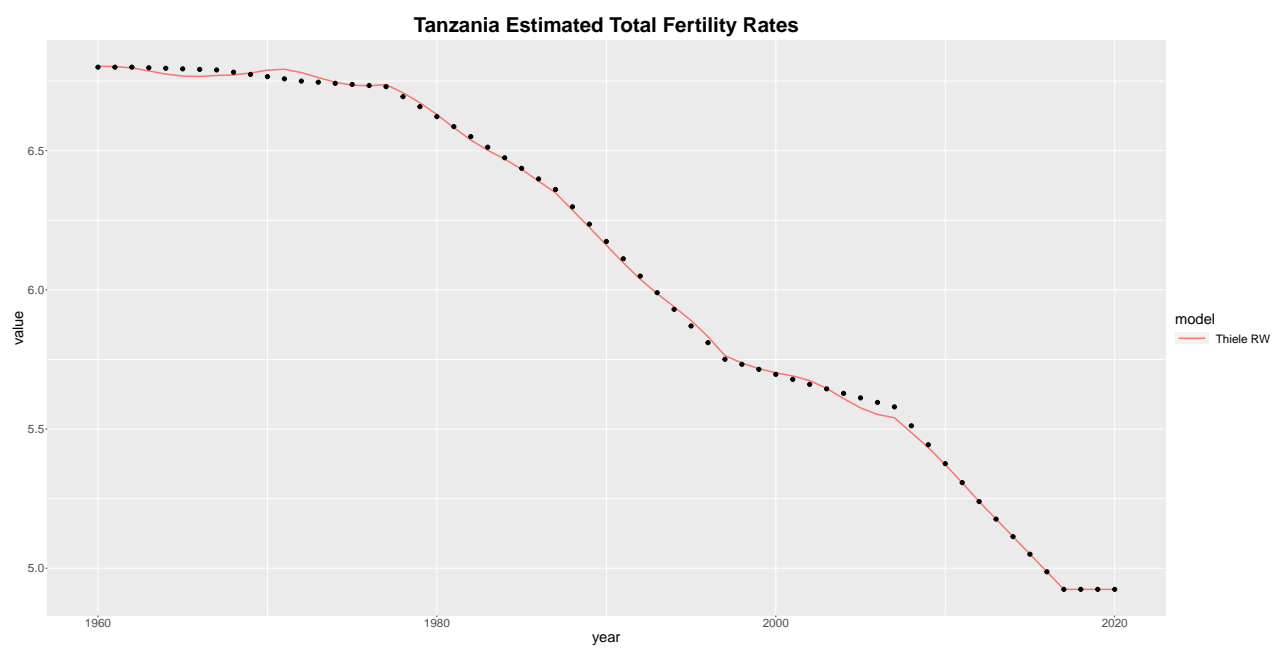


Figure 19: Total Fertility