Zimbabwe

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

```
## # A tibble: 43 x 6
##      age `1969`  `1982`  `1992`  `2002`  `2012`
##    <dbl>  <dbl>   <dbl>   <dbl>   <dbl>   <dbl>
##  1     0   415. 271854. 328828. 343114. 426693.
##  2     2   448. 264446. 318479. 333634. 389402.
##  3     4   491. 257906. 324455. 321781. 360807.
##  4     6   519. 246989. 324110. 312154. 345123.
##  5     8   521. 233983. 319723. 307684. 340926.
##  6    10   518. 220253. 306561. 306656. 344293.
##  7    12   467. 202150. 291974. 303190. 331478.
##  8    14   432. 187143. 274762. 305203. 316030.
##  9    16   370. 175135. 256694. 306152. 292142.
## 10    18   345. 162005. 239001. 301663. 280450.
## # ... with 33 more rows
```

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

```
## # A tibble: 43 x 6
##      age `1969`  `1982`  `1992`  `2002`  `2012`
##    <dbl>  <dbl>   <dbl>   <dbl>   <dbl>   <dbl>
##  1     0   470. 263111. 326175. 342853. 424035.
##  2     2   466. 256279. 315825. 333393. 387255.
##  3     4   490. 252344. 321073. 321414. 358706.
##  4     6   520. 243658. 319735. 310629. 342480.
##  5     8   542. 233752. 315848. 304305. 338264.
##  6    10   530. 222239. 303153. 303523. 343293.
##  7    12   478. 204112. 288903. 301810. 333269.
##  8    14   434. 184258. 269704. 303010. 318052.
##  9    16   382. 164894. 247847. 295706. 287118.
## 10    18   332. 145485. 225824. 278207. 261361.
## # ... with 33 more rows
```

Thiele log-Normal Hump RW

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

```
##           log_tau2_logpop_f           log_tau2_logpop_f
##                   5.8414441                   4.3881933
##           log_tau2_logpop_m           log_tau2_logpop_m
##                   5.8852051                   4.4343446
##                log_tau2_fx                log_tau2_gx_f
##                   4.2964869                   4.4796298
##              log_tau2_gx_m              logit_rho_g_x_f
##                   4.3642591                   5.1115516
##             logit_rho_g_t_f              logit_rho_g_x_m
##                   4.5732771                   4.7315963
##             logit_rho_g_t_m                log_lambda_tp
##                   5.3733447                   2.7875690
## log_lambda_tp_0_inflated_sd             log_dispersion_f
##                   0.3531190                   1.9795332
```

```
##            log_dispersion_m     log_marginal_prec_phi_f
##                   2.0148395                   4.6595622
##     log_marginal_prec_psi_f  log_marginal_prec_lambda_f
##                   4.5892780                   2.1259547
##   log_marginal_prec_delta_f log_marginal_prec_epsilon_f
##                   3.0460362                   3.9469559
##       log_marginal_prec_A_f       log_marginal_prec_B_f
##                   6.8934153                   6.6231615
##     log_marginal_prec_phi_m     log_marginal_prec_psi_m
##                   4.5971096                   4.6050586
##  log_marginal_prec_lambda_m   log_marginal_prec_delta_m
##                   1.7972213                   2.7009100
## log_marginal_prec_epsilon_m       log_marginal_prec_A_m
##                   3.9372605                   6.8944199
##       log_marginal_prec_B_m             logit_rho_phi_f
##                   4.5772140                   1.3445778
##             logit_rho_psi_f               logit_rho_A_f
##                   1.2008855                   1.1072108
##               logit_rho_B_f             logit_rho_phi_m
##                   0.8064305                   1.4429933
##             logit_rho_psi_m               logit_rho_A_m
##                   1.2476128                   0.7936407
##               logit_rho_B_m
##                   2.5746691
```

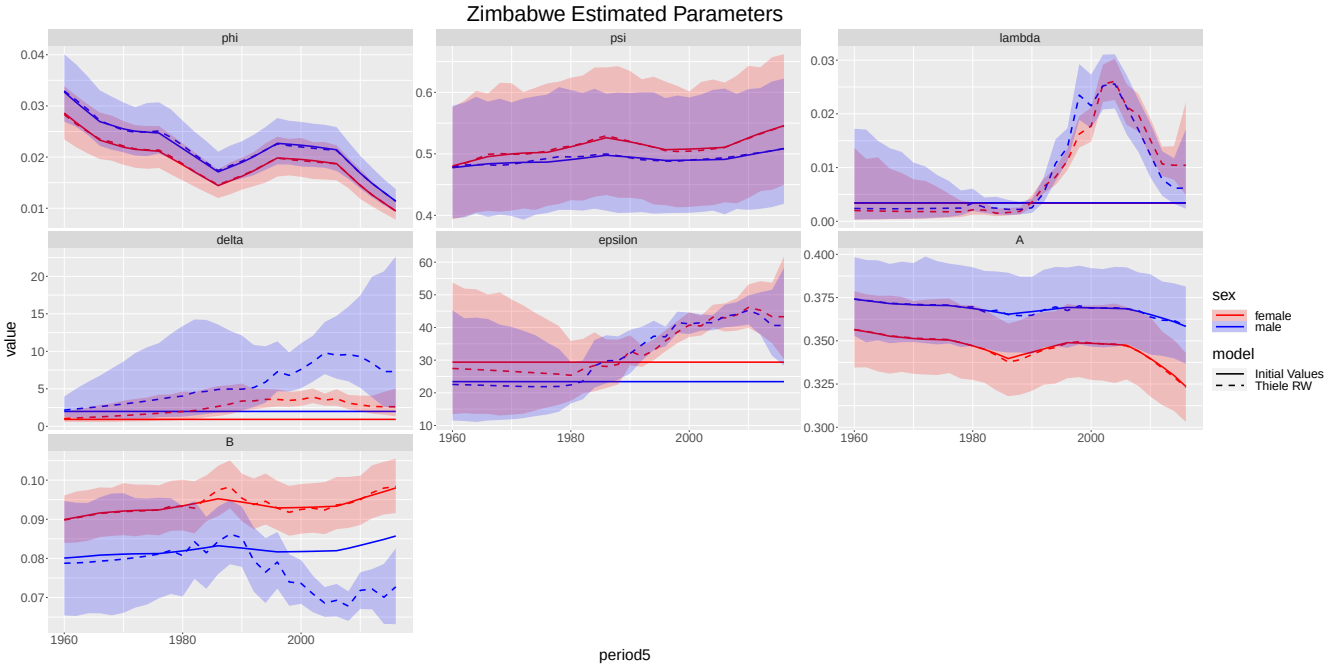

Figure 1: Estimated parameters

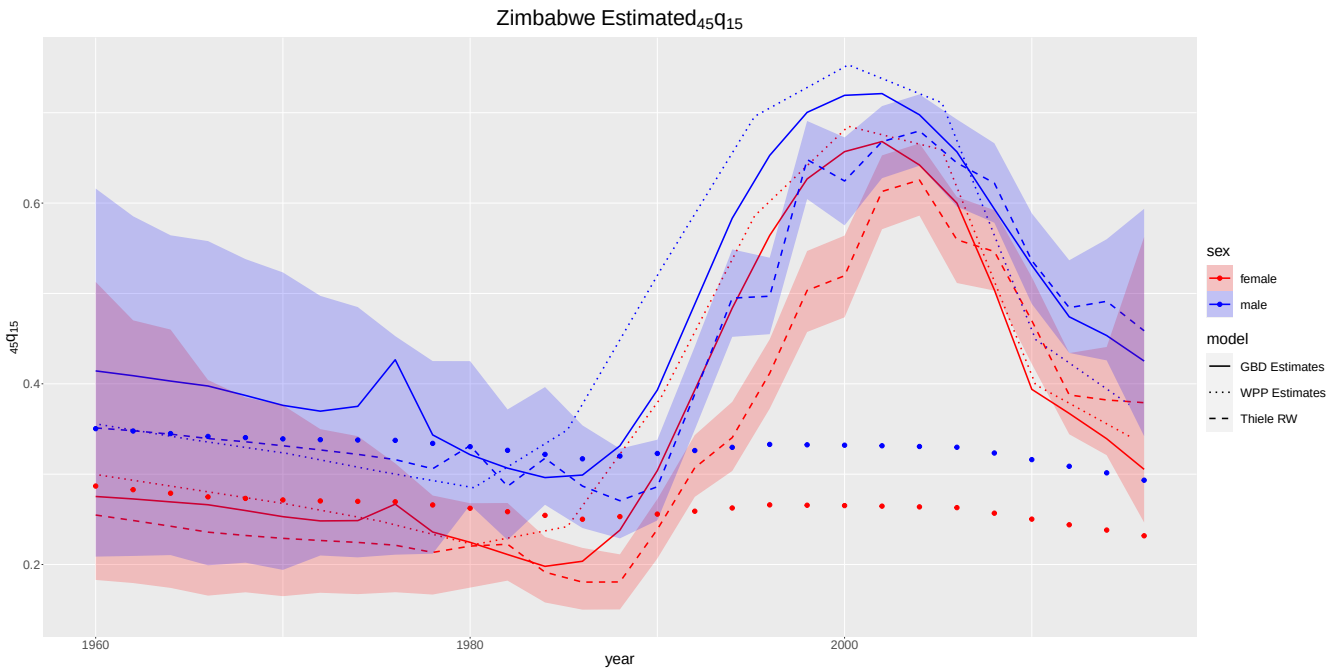

Figure 2: Estimated ${}_{45}q_{15}$

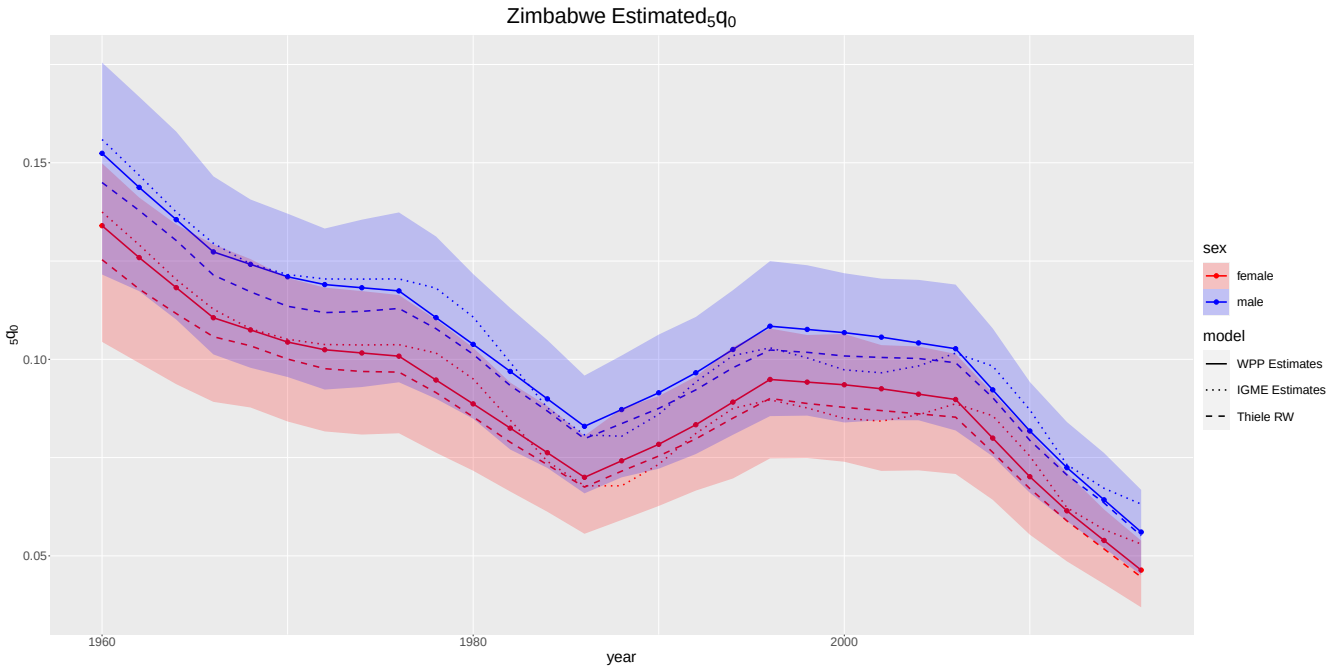

Figure 3: Estimated $_5q_0$

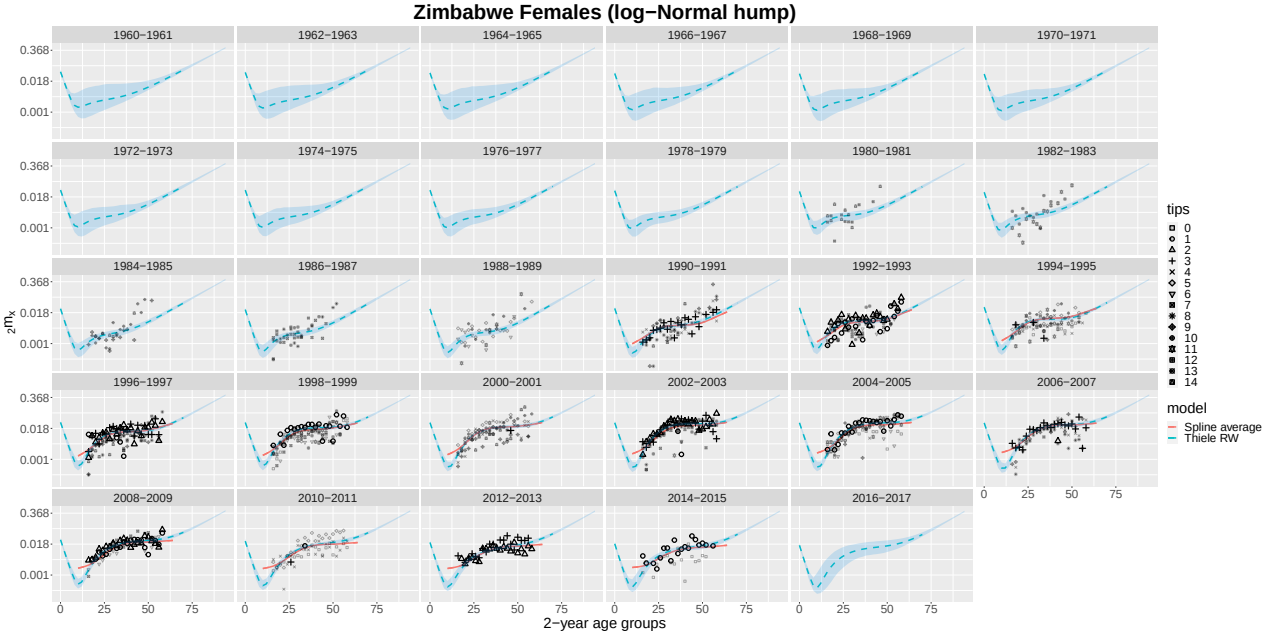

Figure 4: Mortality Schedules

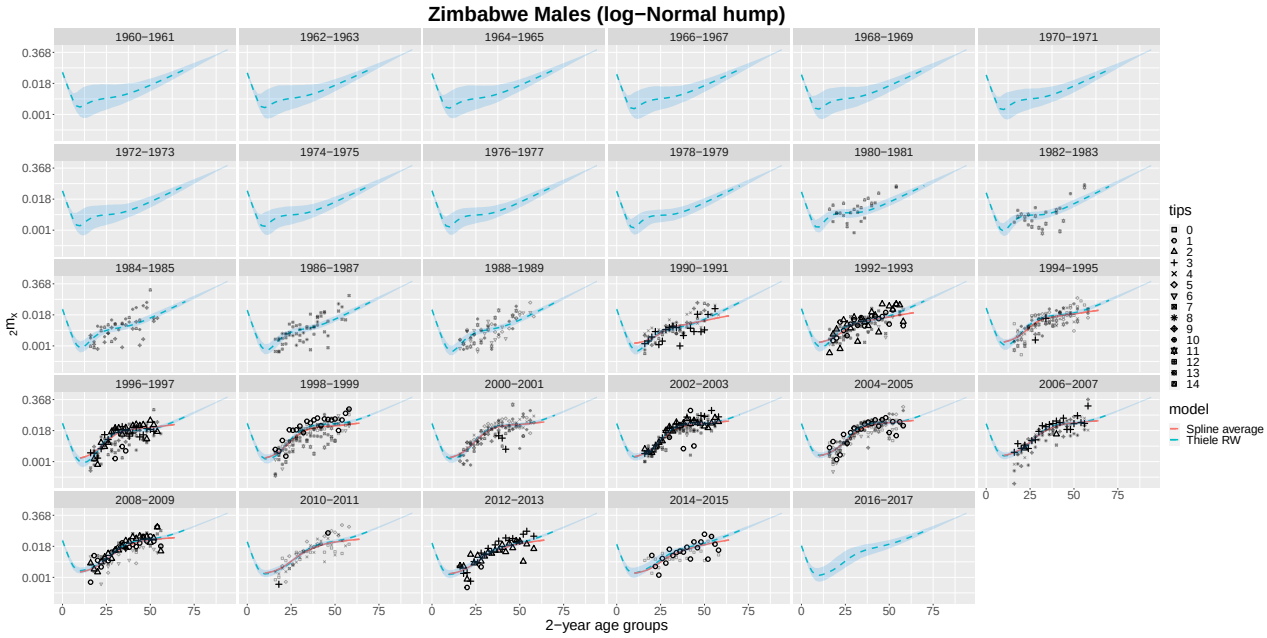

Figure 5: Mortality Schedules

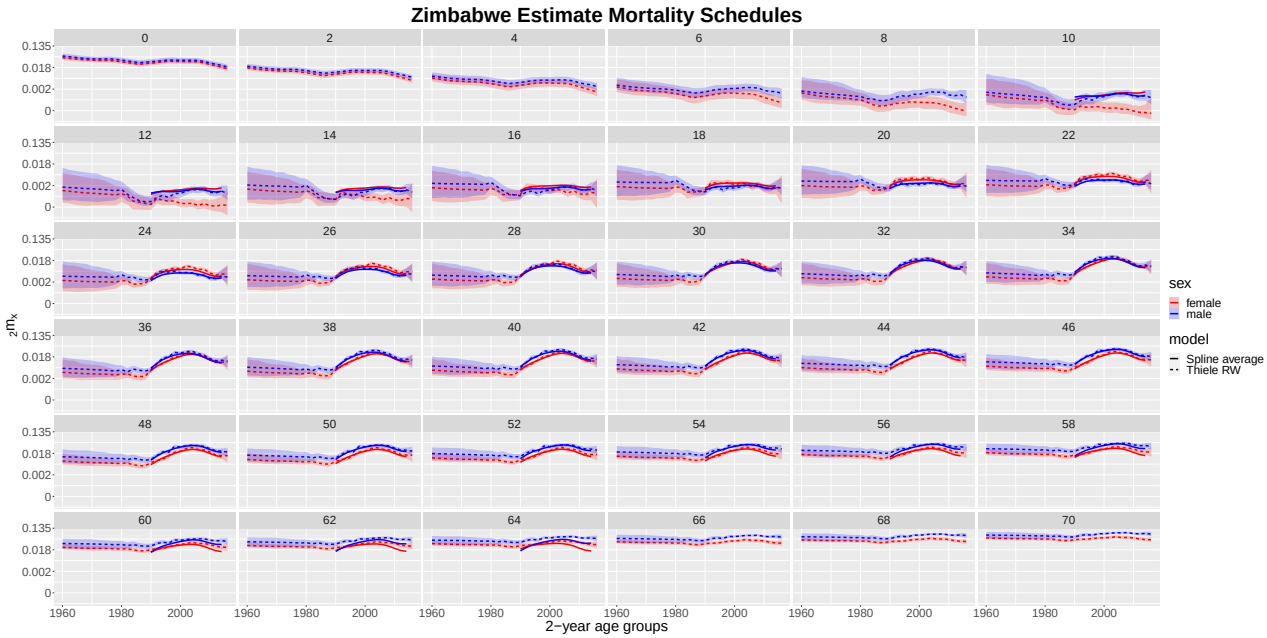

Figure 6: Mortality Schedules

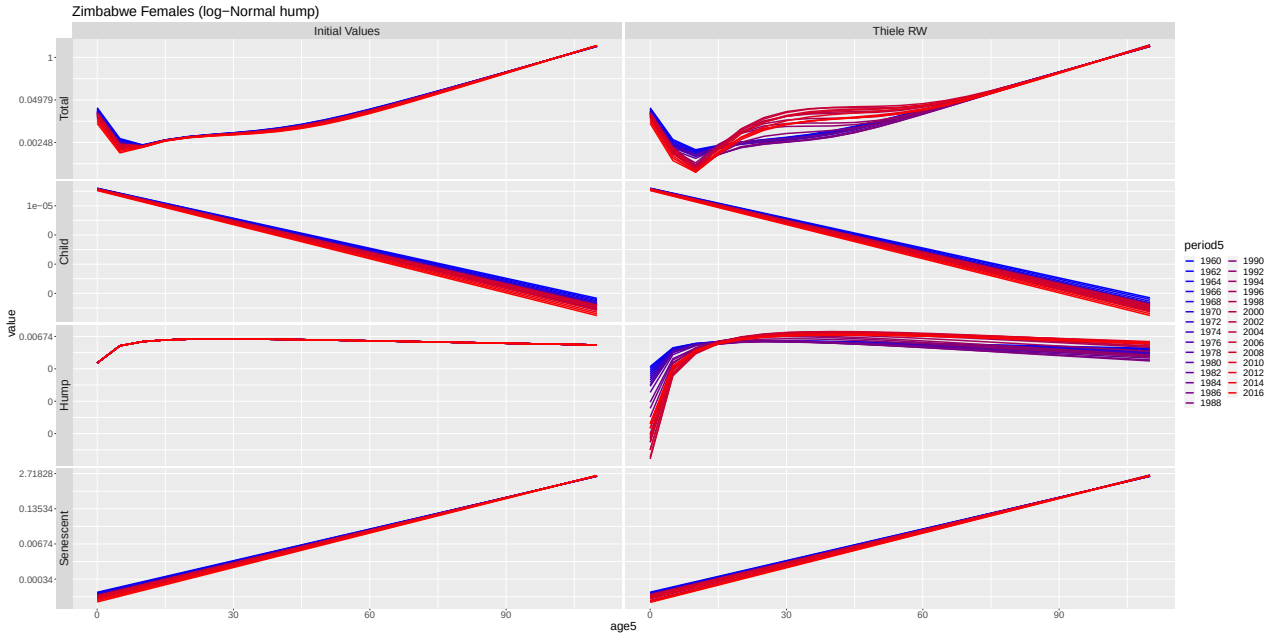

Figure 7: Thiele Decomposed

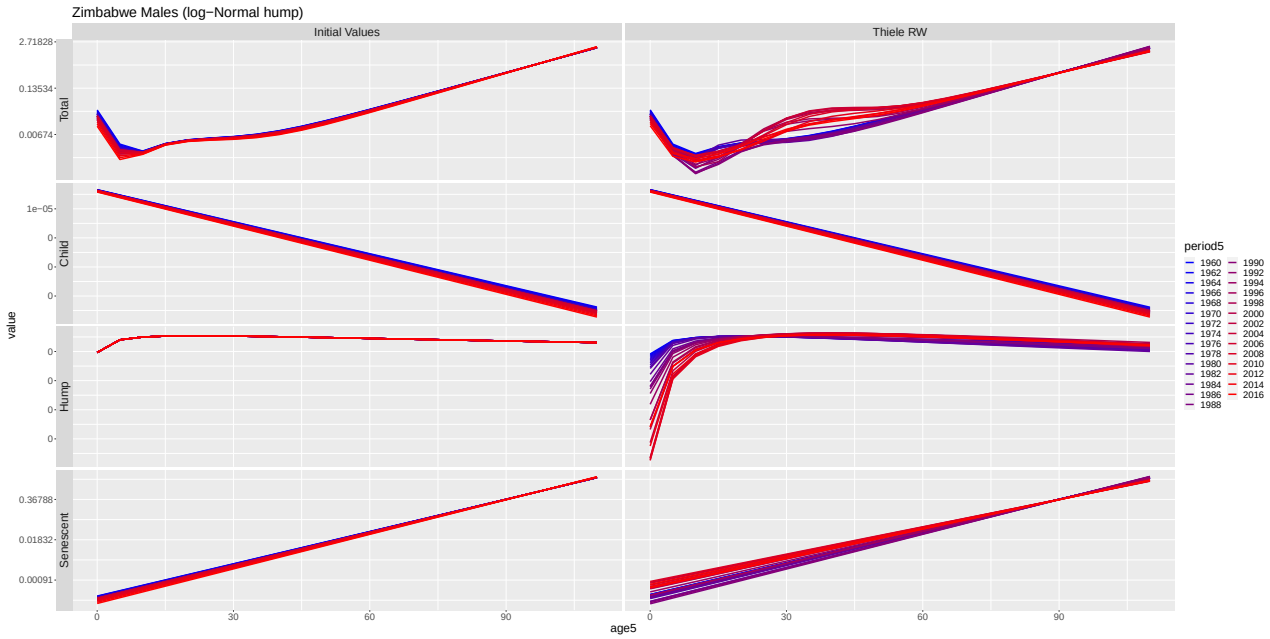

Figure 8: Thiele Decomposed

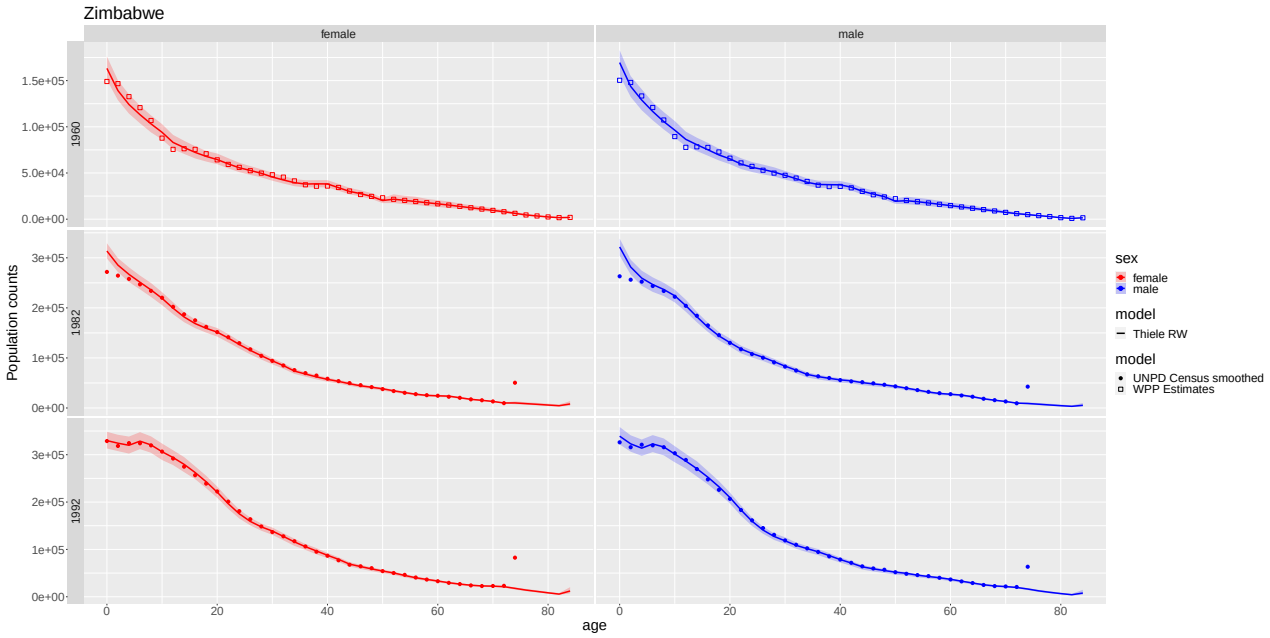

Figure 9: Population

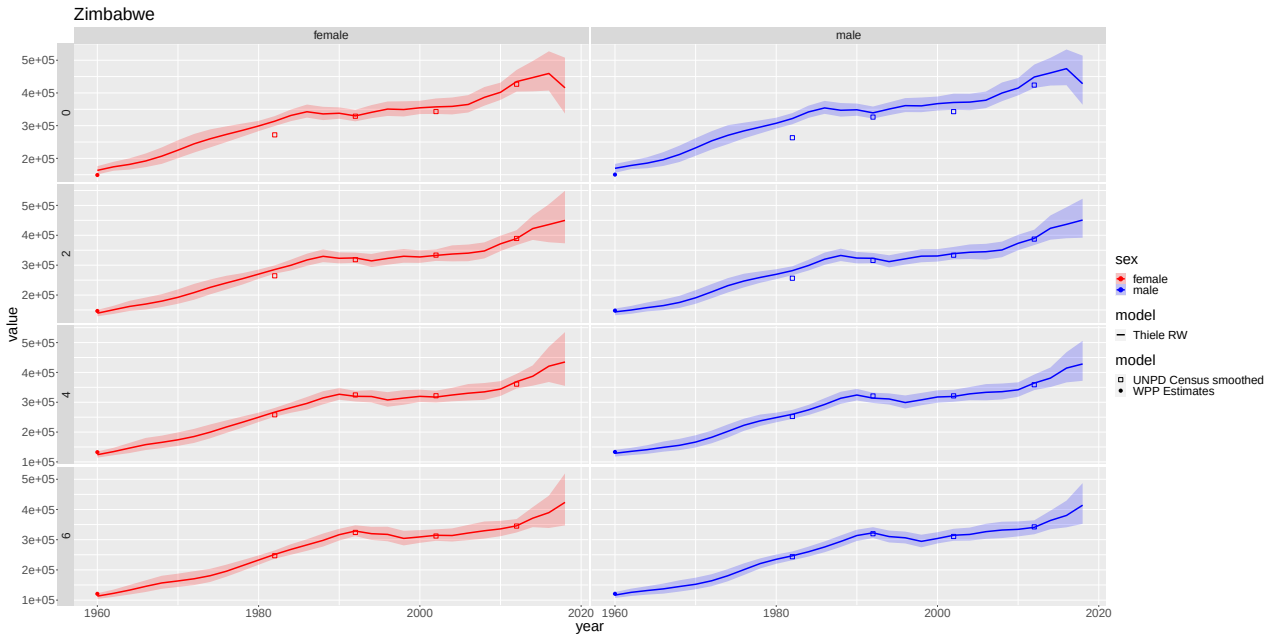

Figure 10: Population

Figure 11: Population

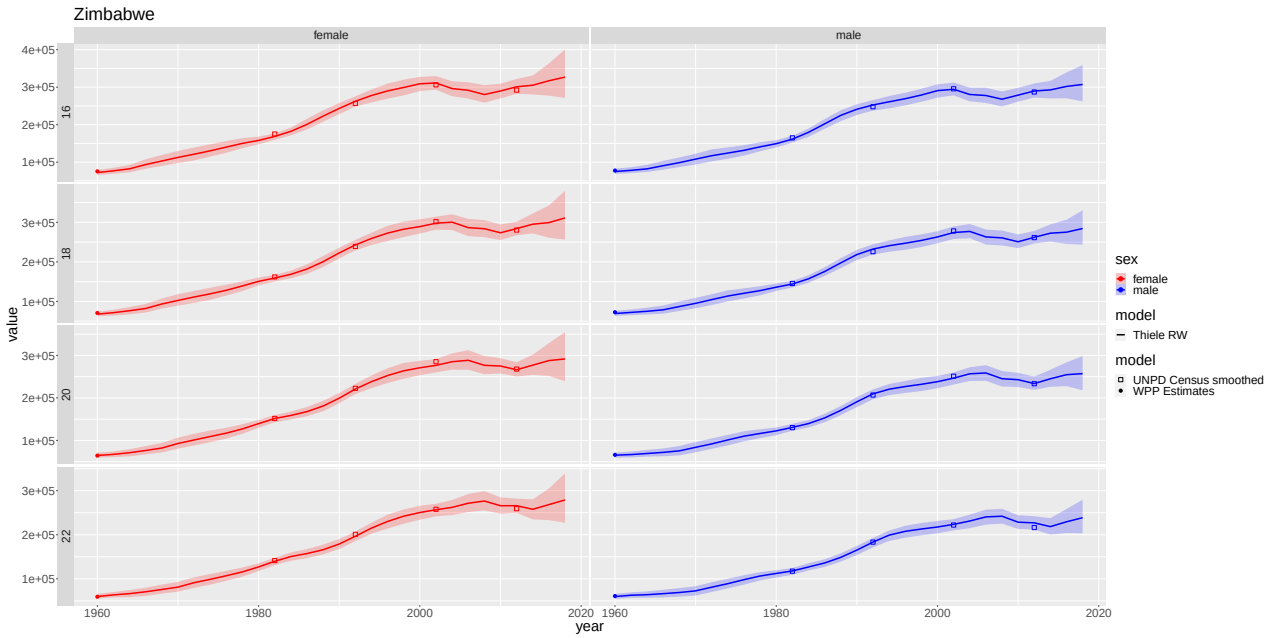

Figure 12: Population

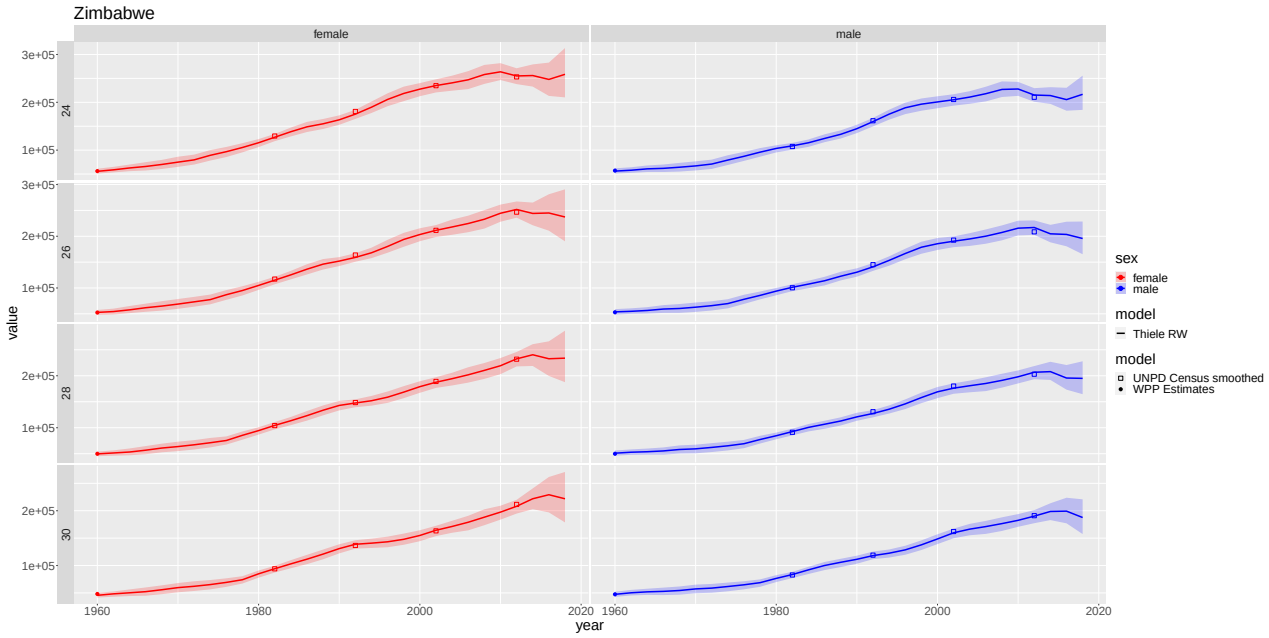

Figure 13: Population

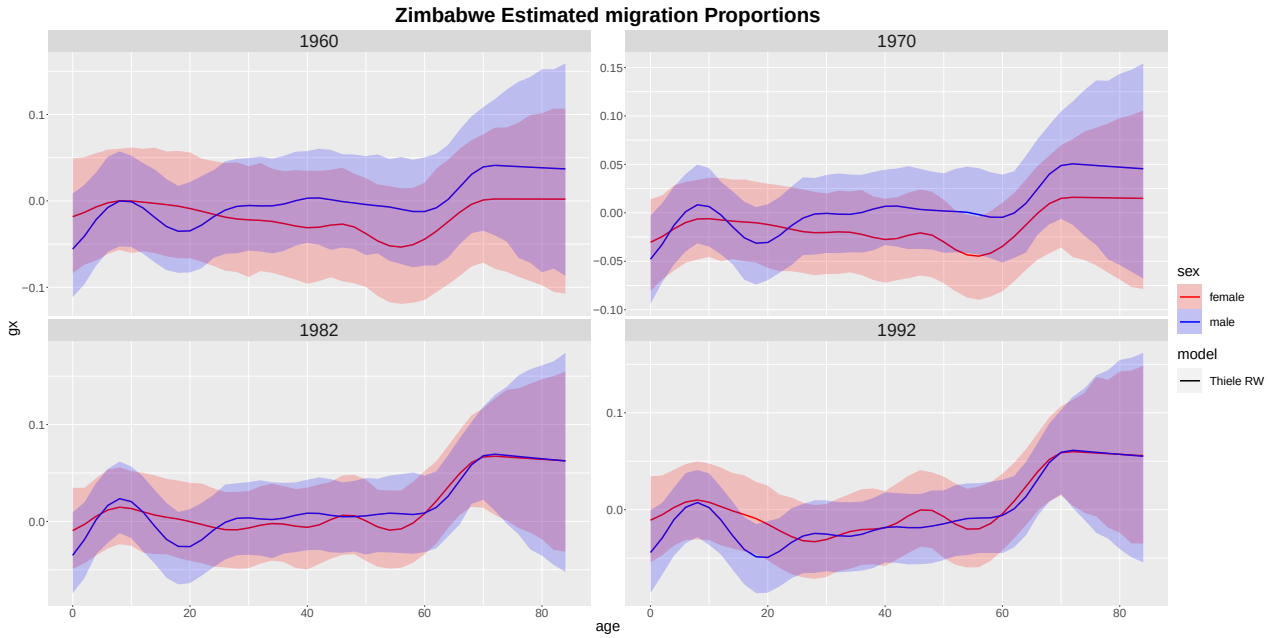

Figure 14: Migration

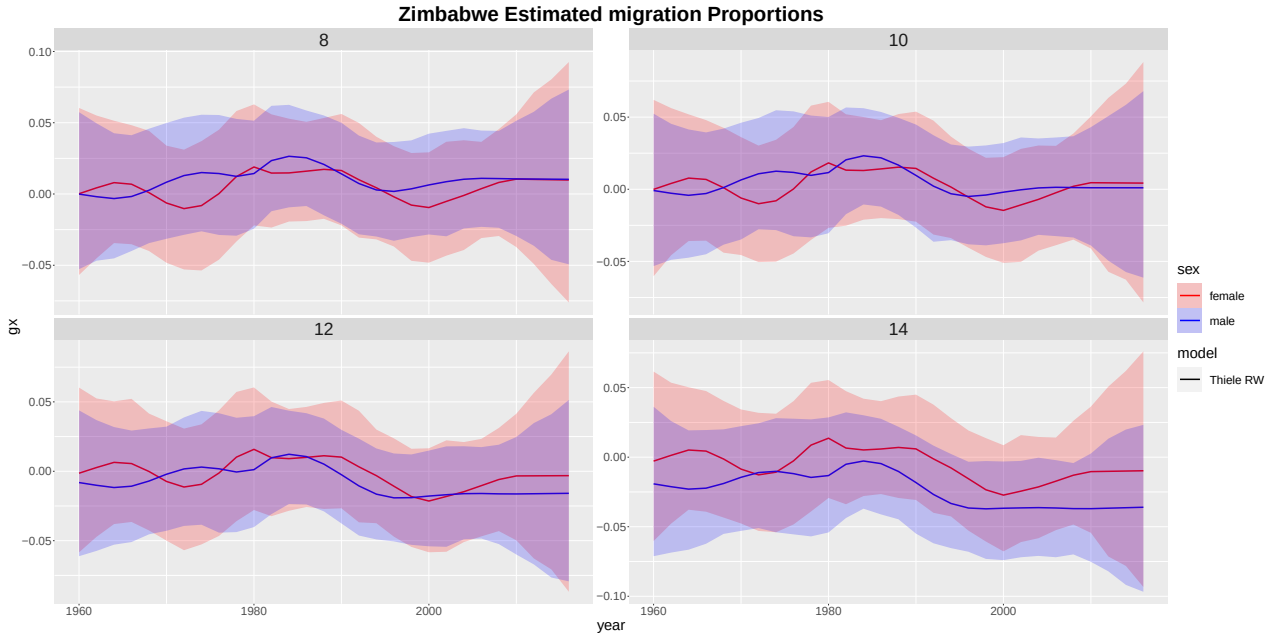

Figure 15: Migration

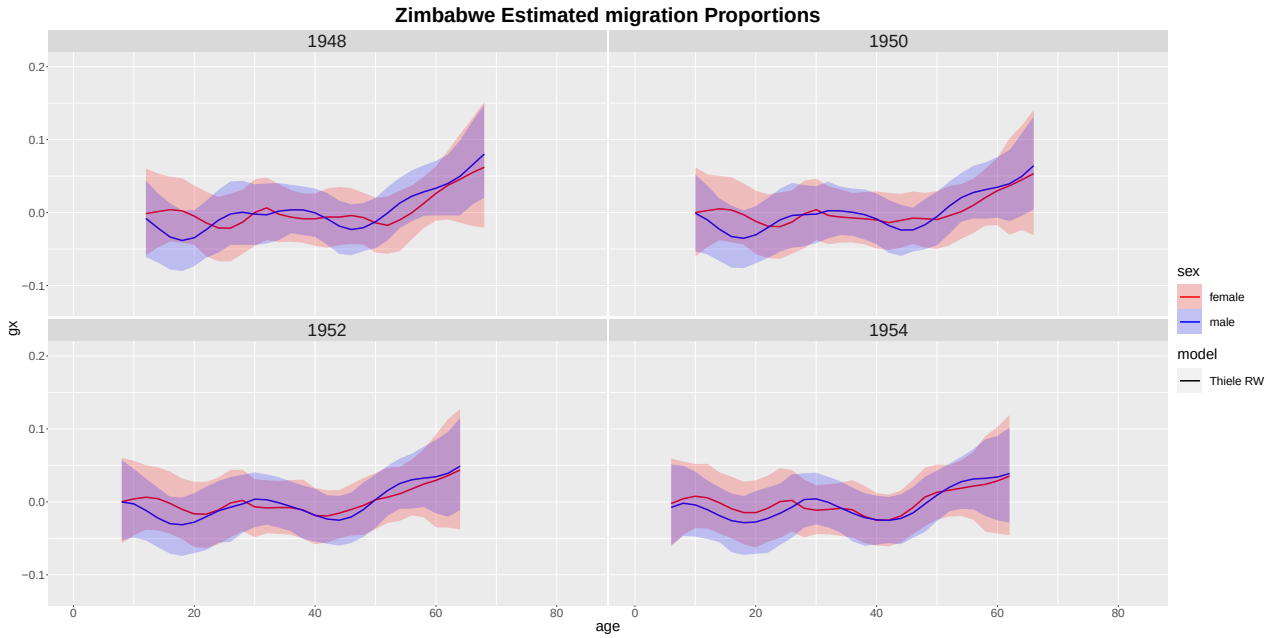

Figure 16: Migration

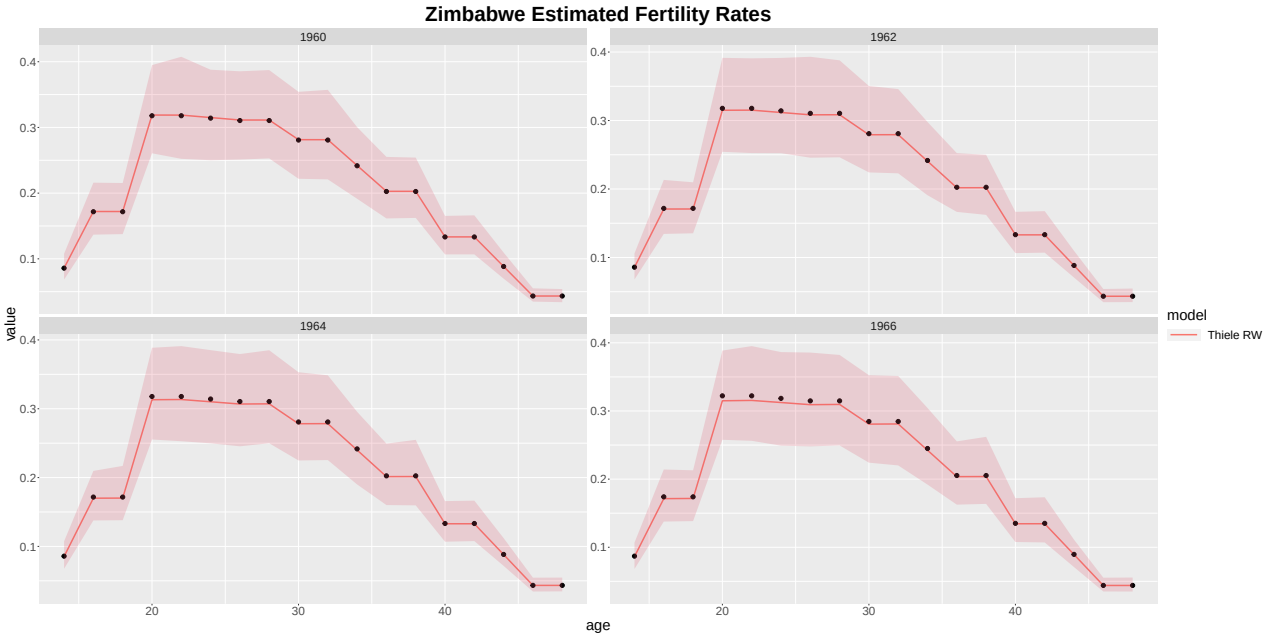

Figure 17: Fertility

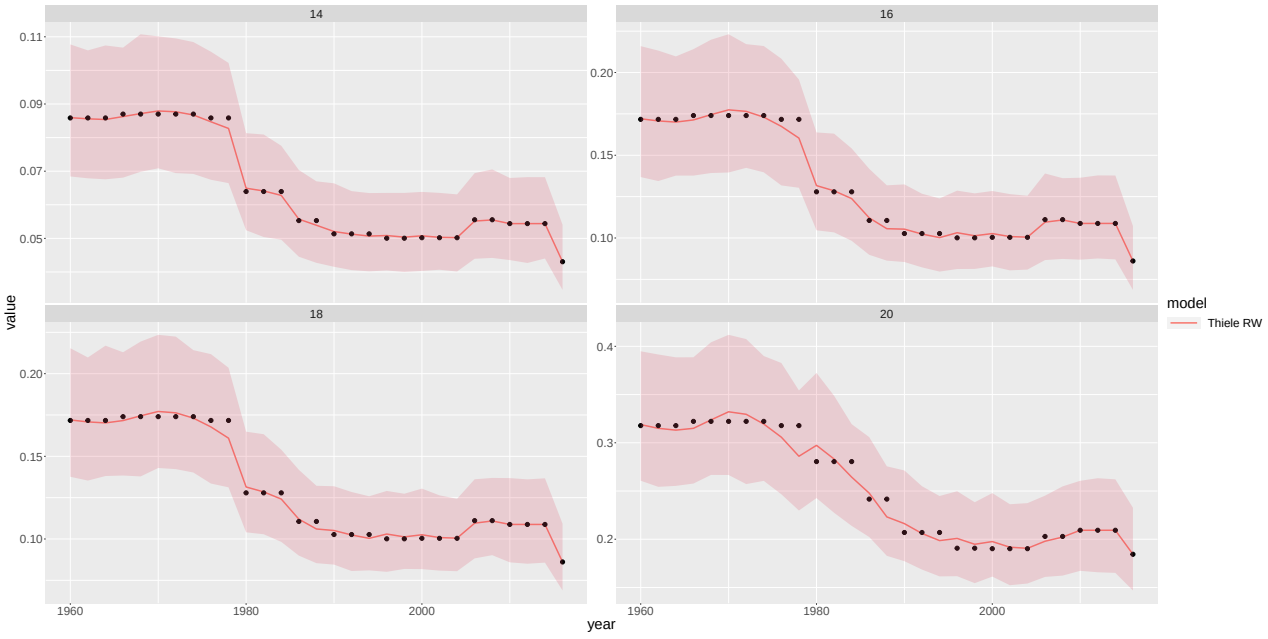

Figure 18: Fertility

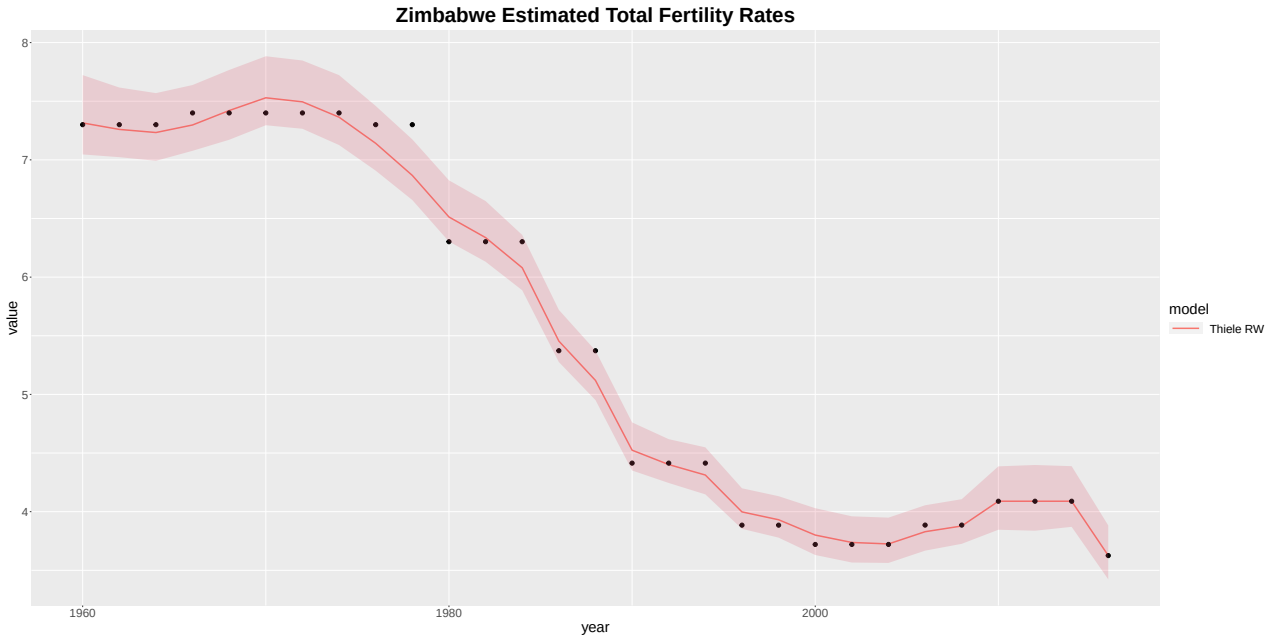

Figure 19: Total Fertility