Burundi

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

```
## # A tibble: 86 x 3
##      age  `1990`  `2008`
##    <dbl>   <dbl>   <dbl>
##  1     0 103518. 148758.
##  2     1  96768. 144323.
##  3     2  99280. 146587.
##  4     3  98444. 141195.
##  5     4  97191. 137060.
##  6     5  93753. 132500.
##  7     6  89859. 125239.
##  8     7  86191. 118063.
##  9     8  81728. 111556.
## 10     9  75719. 107174.
## # ... with 76 more rows
```

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

```
## # A tibble: 18 x 2
##      age  `1979`
##    <dbl>   <dbl>
##  1     0 351217.
##  2     5 283841.
##  3    10 246185.
##  4    15 233752.
##  5    20 205602.
##  6    25 156787.
##  7    30 117321.
##  8    35  96868.
##  9    40  85160.
## 10    45  73888.
## 11    50  61436.
## 12    55  51258.
## 13    60  44370.
## 14    65  34656.
## 15    70  24107.
## 16    75  15919.
## 17    80   8678.
## 18    85   8387.
```

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

```
## # A tibble: 86 x 3
##      age  `1990`  `2008`
##    <dbl>   <dbl>   <dbl>
##  1     0 103634. 145551.
##  2     1  96811. 140828.
##  3     2  98842. 142434.
##  4     3  97968. 137049.
##  5     4  96569. 132701.
##  6     5  93065. 127981.
```

```
##  7     6  89092. 120616.
##  8     7  85085. 113402.
##  9     8  80520. 106804.
## 10     9  74582. 102112.
## # ... with 76 more rows
```

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

```
## # A tibble: 18 x 2
##      age  `1979`
##    <dbl>   <dbl>
##  1     0 346363.
##  2     5 281131.
##  3    10 243533.
##  4    15 226268.
##  5    20 194141.
##  6    25 145324.
##  7    30 104707.
##  8    35  81102.
##  9    40  68939.
## 10    45  59998.
## 11    50  49340.
## 12    55  40463.
## 13    60  34783.
## 14    65  28076.
## 15    70  21455.
## 16    75  15673.
## 17    80   9392.
## 18    85  12196.
```

Thiele log-Normal Hump Spline

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

```
##           log_tau2_logpop_f           log_tau2_logpop_f           log_tau2_logpop_m           log_tau2_
##                   5.2325638                   3.6718180                   5.6733633                   4
##               log_tau2_gx_m         log_lambda_gx_age_f         log_lambda_gx_age_m        log_lambda_g
##                   3.7538573                   8.1558249                   7.8829400                   7
##     log_lambda_gx_agetime_m               log_lambda_tp log_lambda_tp_0_inflated_sd           log_dispe
##                   6.9077926                   1.6293962                  -2.2696066                   0
##     log_marginal_prec_psi_f       log_marginal_prec_A_f       log_marginal_prec_B_f     log_marginal_pre
##                   6.8084289                   6.8240025                   6.9936480                   6
##       log_marginal_prec_B_m           log_lambda_phi_f            log_lambda_psi_f         log_lambda_
##                   6.8840502                   4.3081817                   4.3075190                   4
##               log_lambda_A_f              log_lambda_B_f            log_lambda_phi_m           log_lambd
##                   4.3088804                   4.3380229                   4.3093724                   4
##        log_lambda_epsilon_m              log_lambda_A_m              log_lambda_B_m    logit_lambda_slop
##                   4.3270859                   4.3087087                   4.3376285                   4
##    logit_lambda_slope_rho_m    logit_delta_slope_rho_m   logit_epsilon_slope_rho_m
##                   1.7347762                   2.3852769                  -0.1110906
```

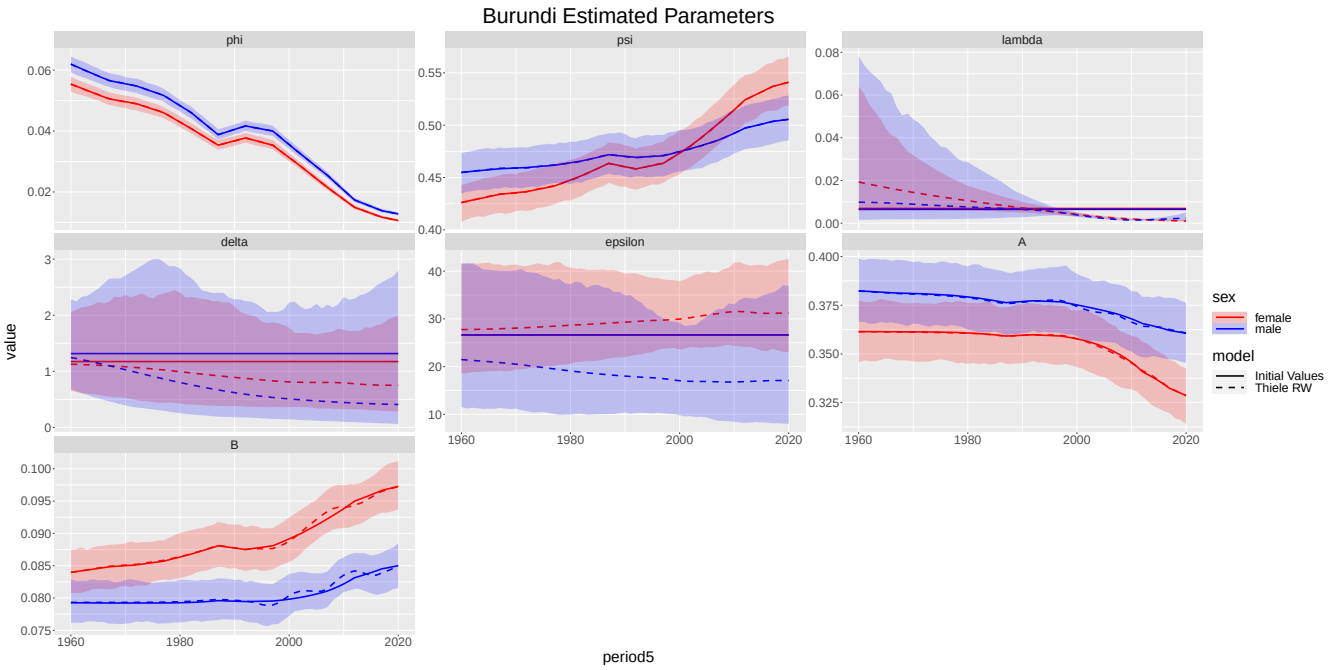

Figure 1: Estimated parameters

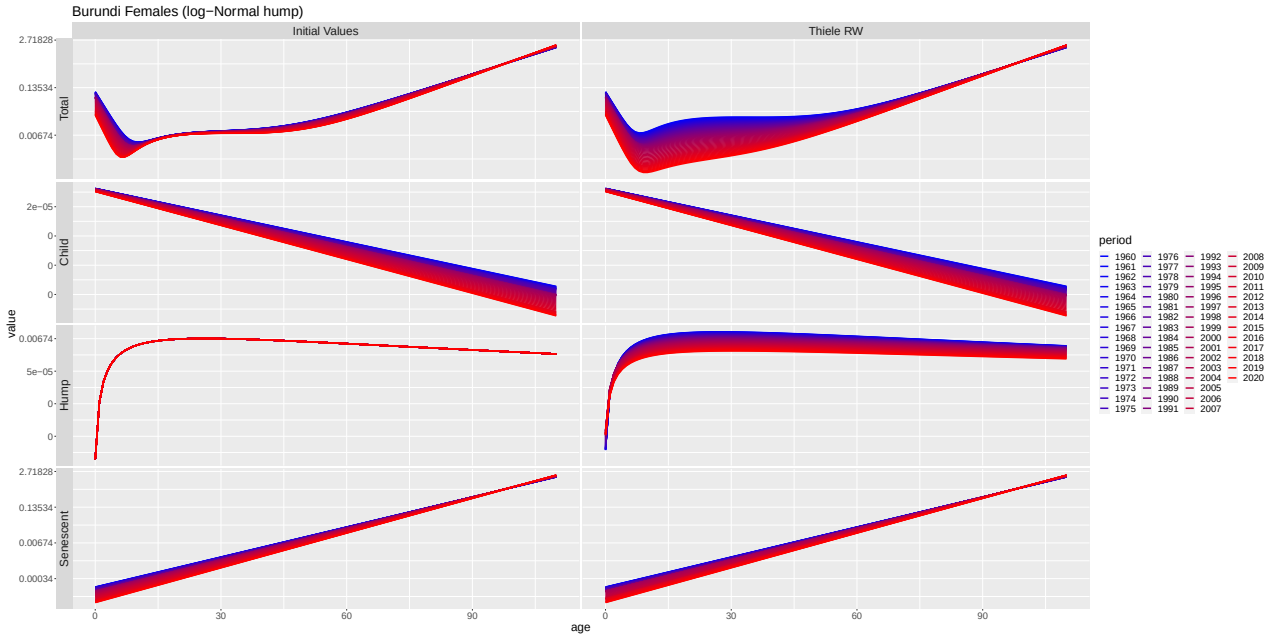

Figure 2: Thiele Decomposed

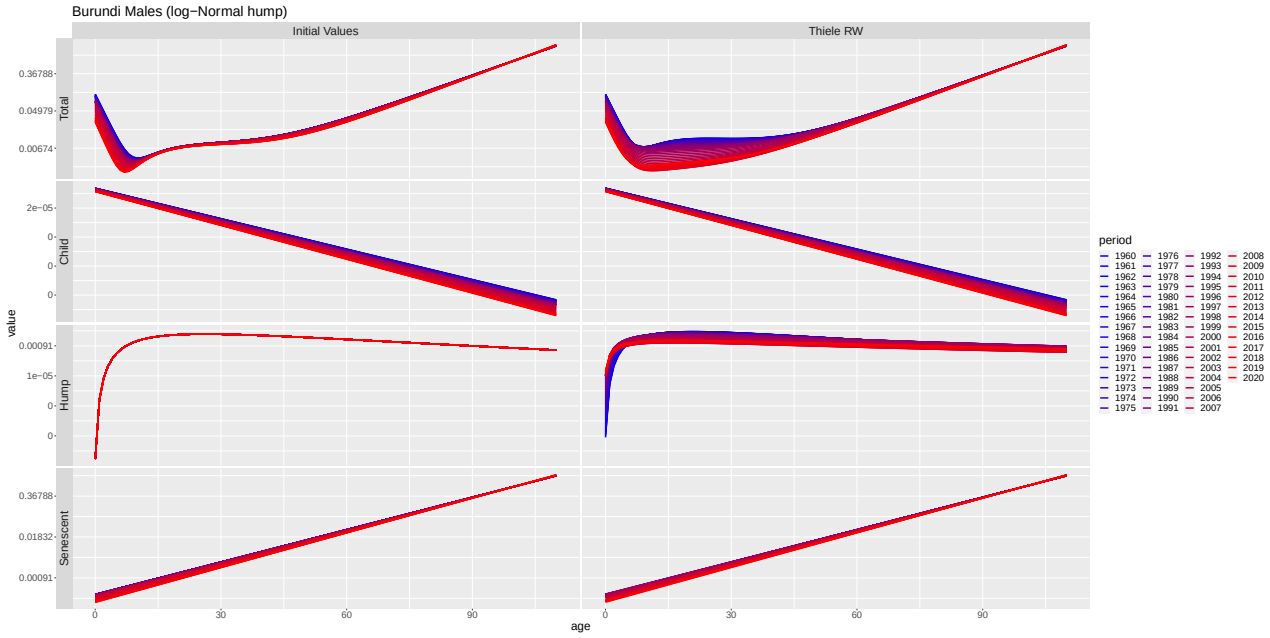

Figure 3: Thiele Decomposed

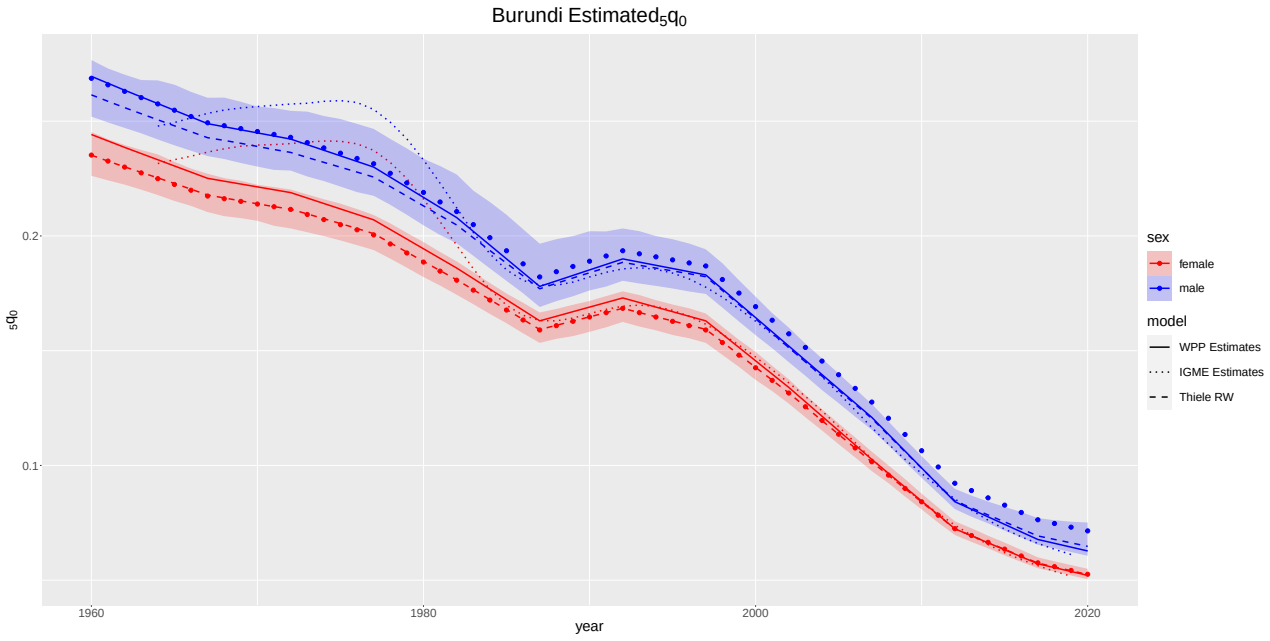

Figure 4: Estimated ${}_5q_0$

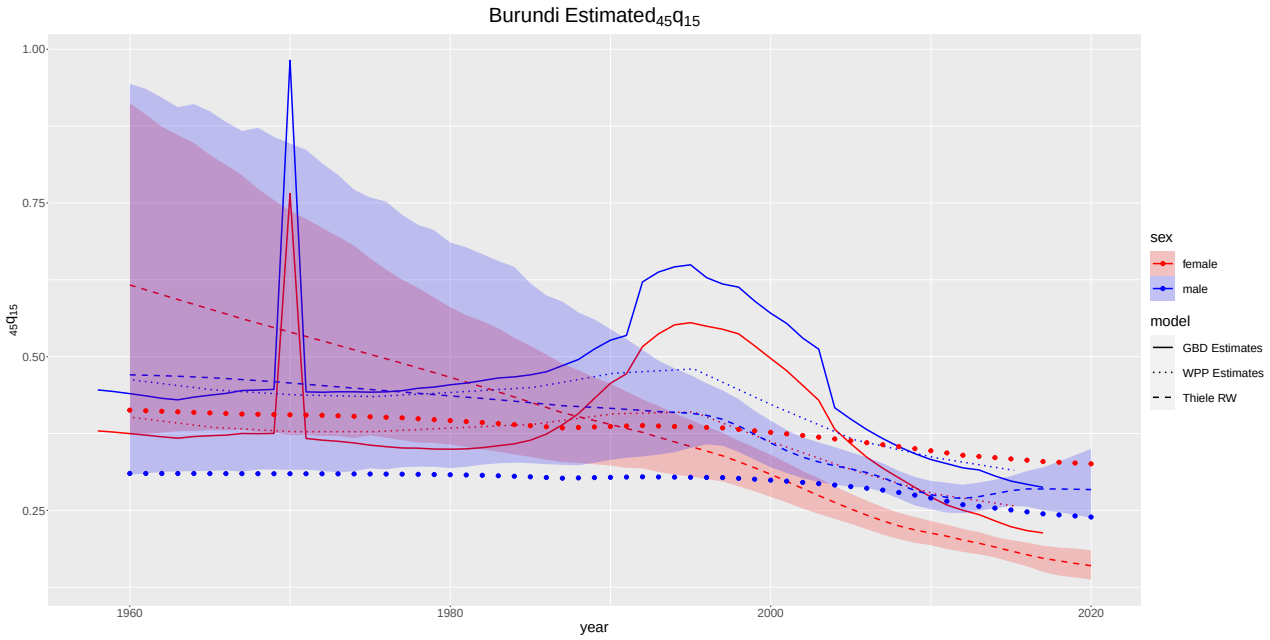

Figure 5: Estimated ${}_{45}q_{15}$

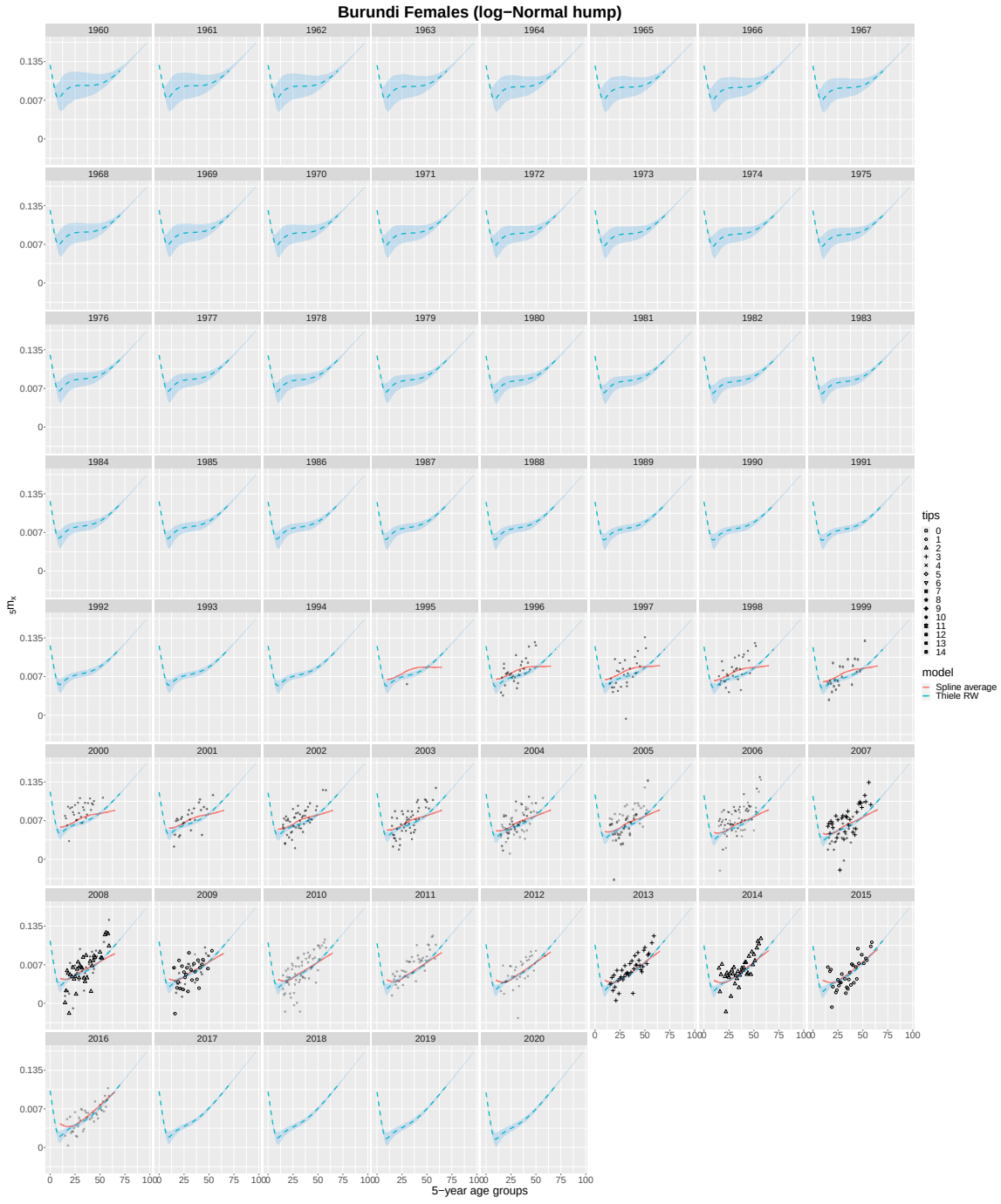

Figure 6: Mortality Schedules

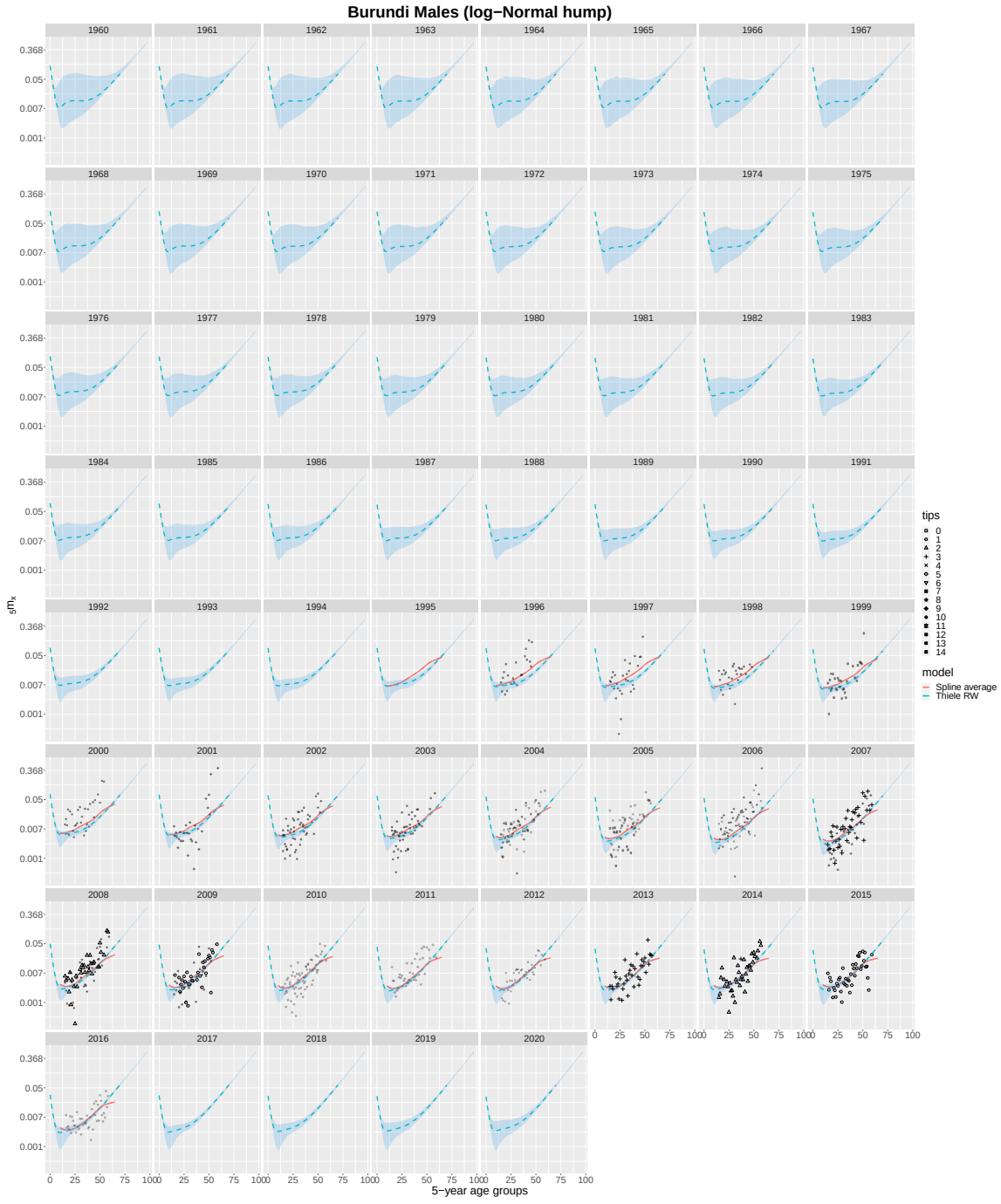

Figure 7: Mortality Schedules

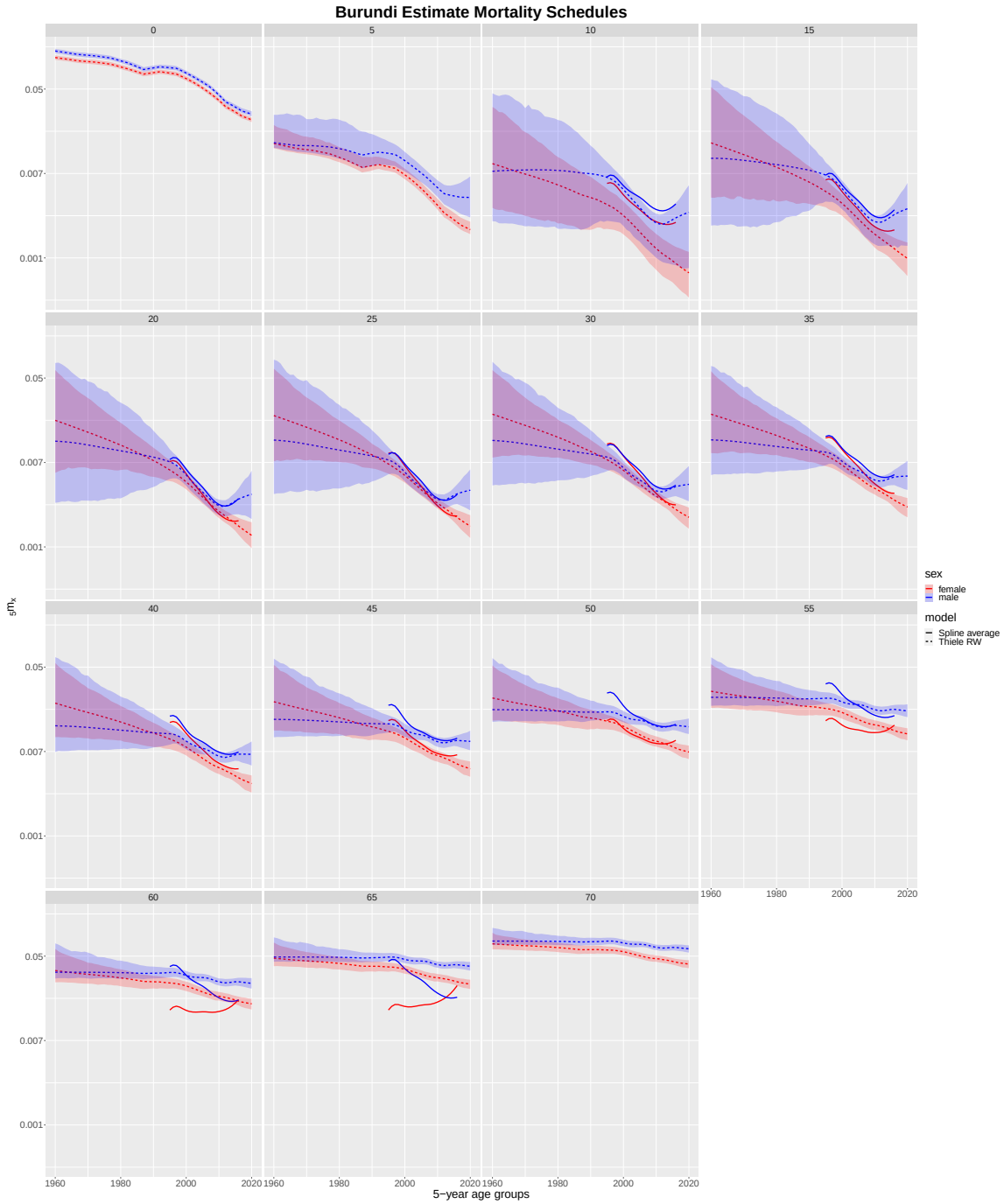

Figure 8: Mortality Schedules

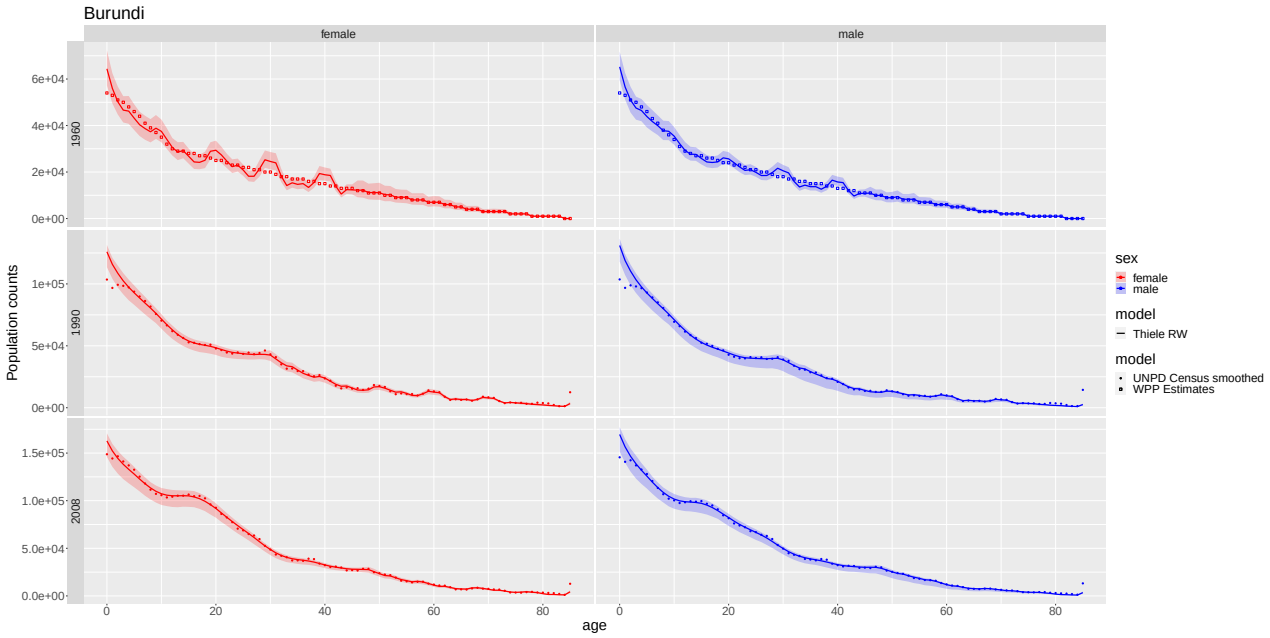

Figure 9: Population

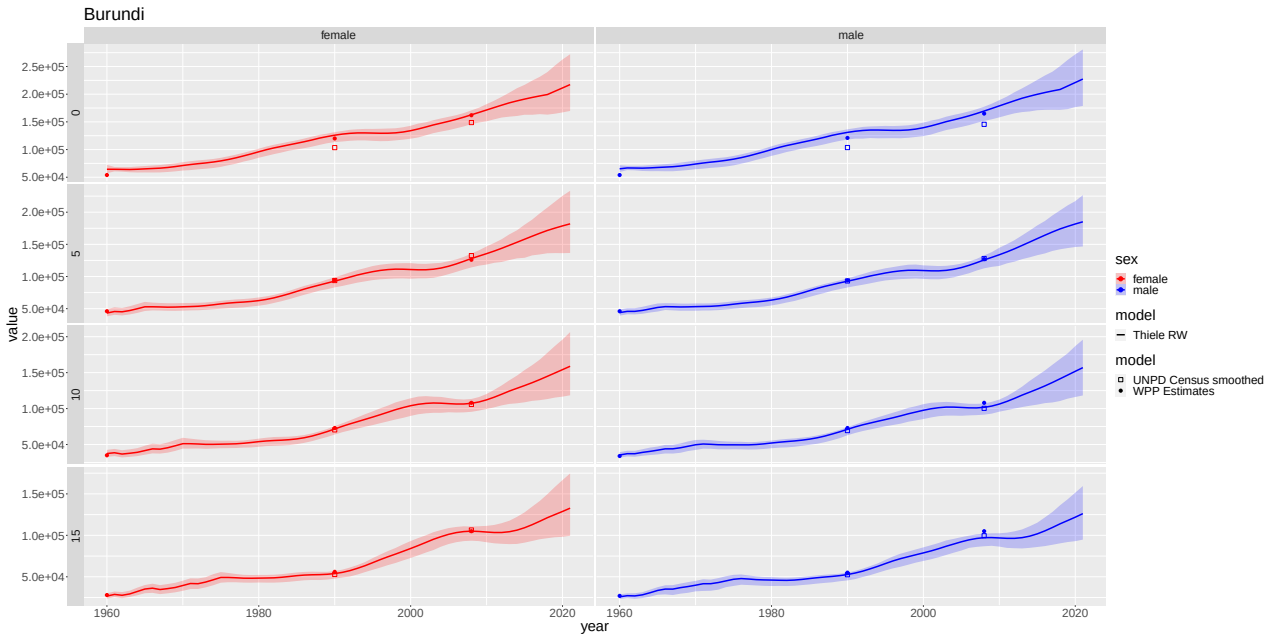

Figure 10: Population

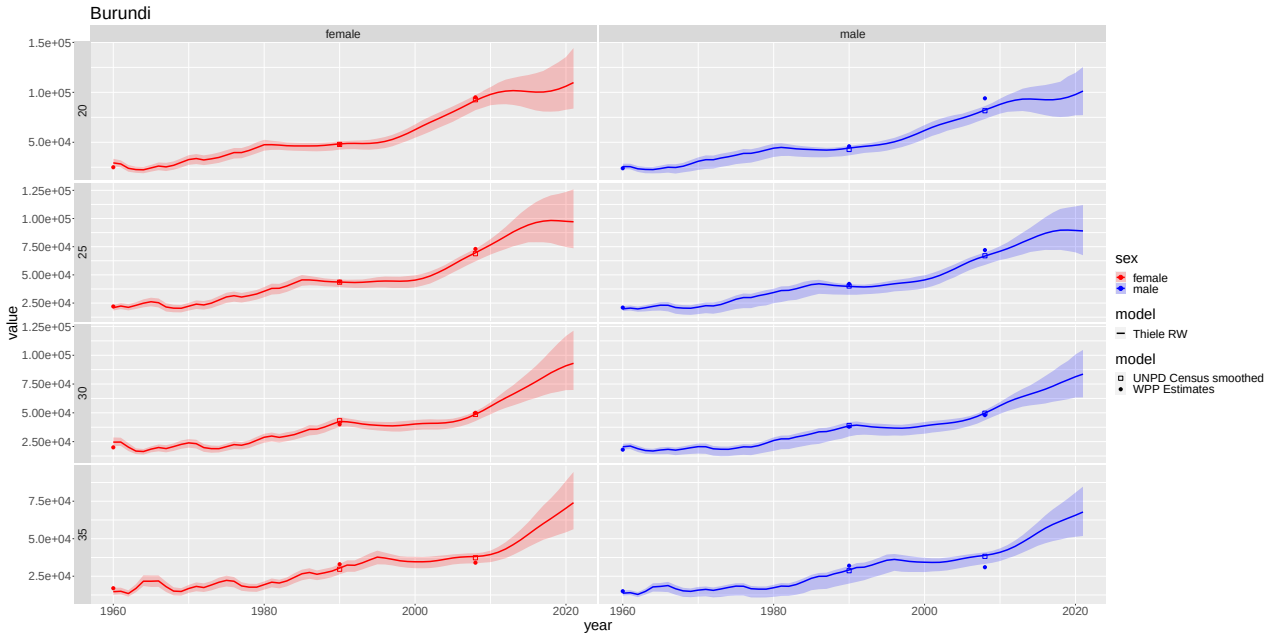

Figure 11: Population

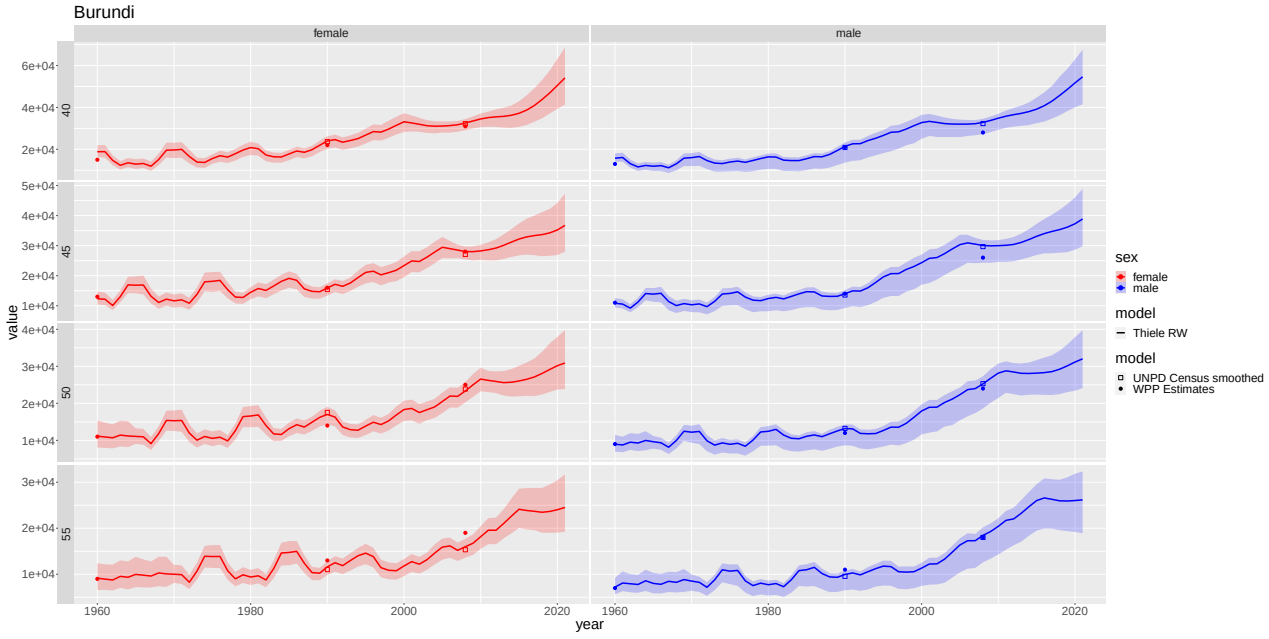

Figure 12: Population

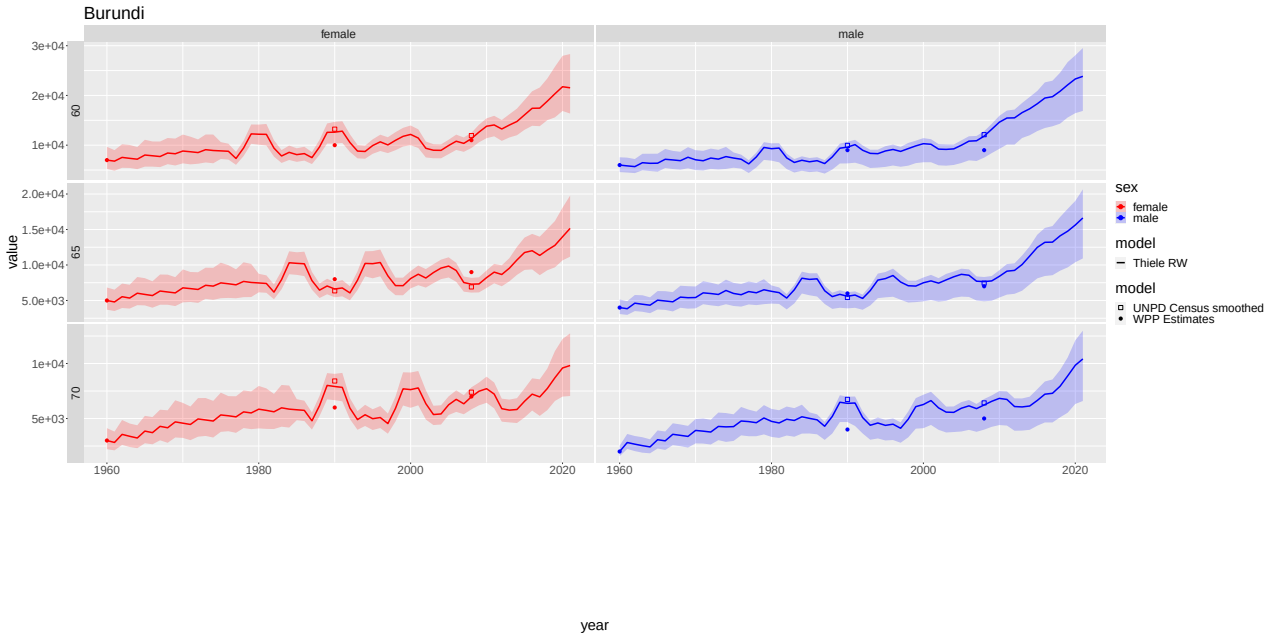

Figure 13: Population

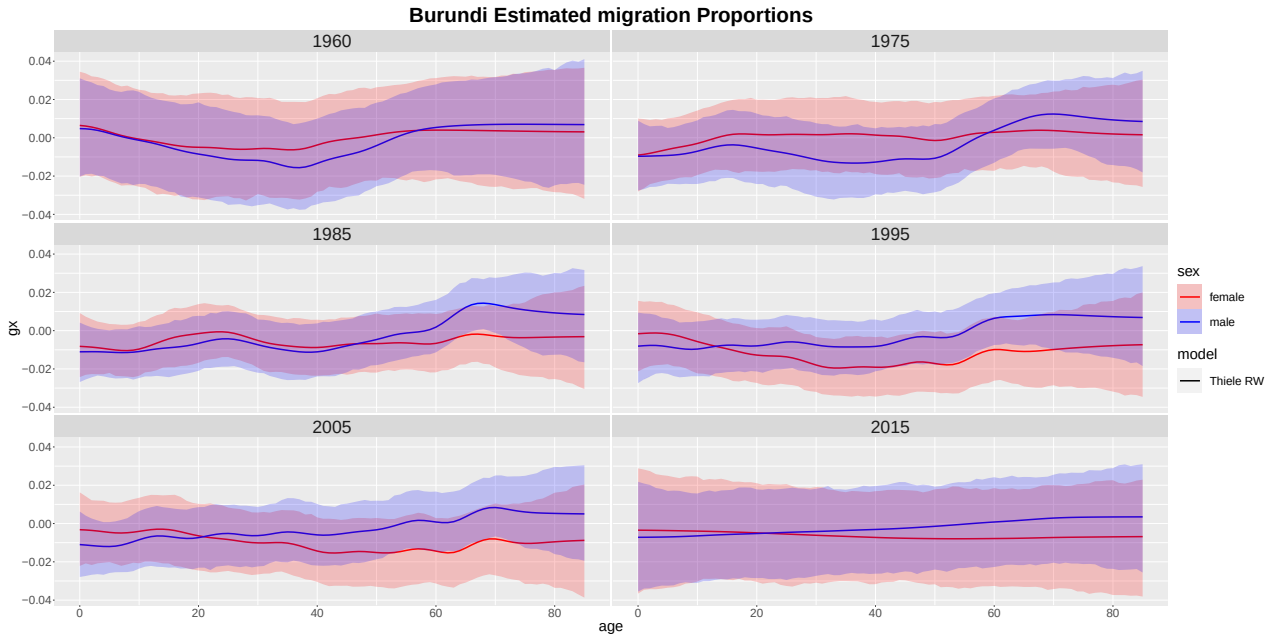

Figure 14: Migration

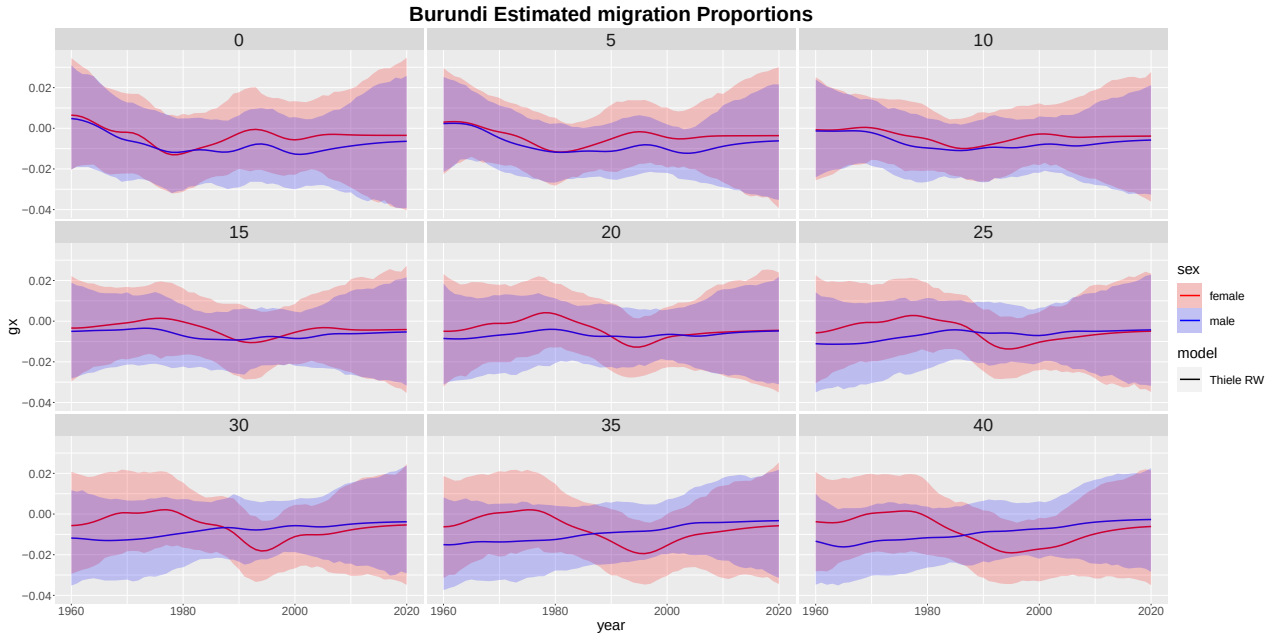

Figure 15: Migration

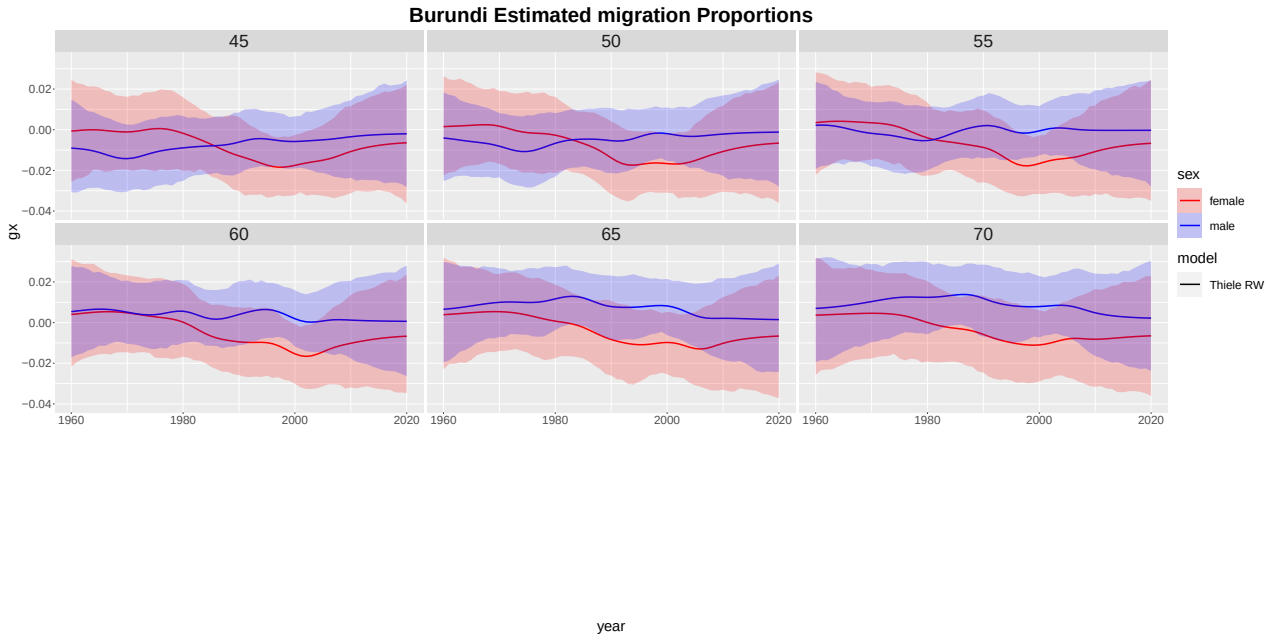

Figure 16: Migration

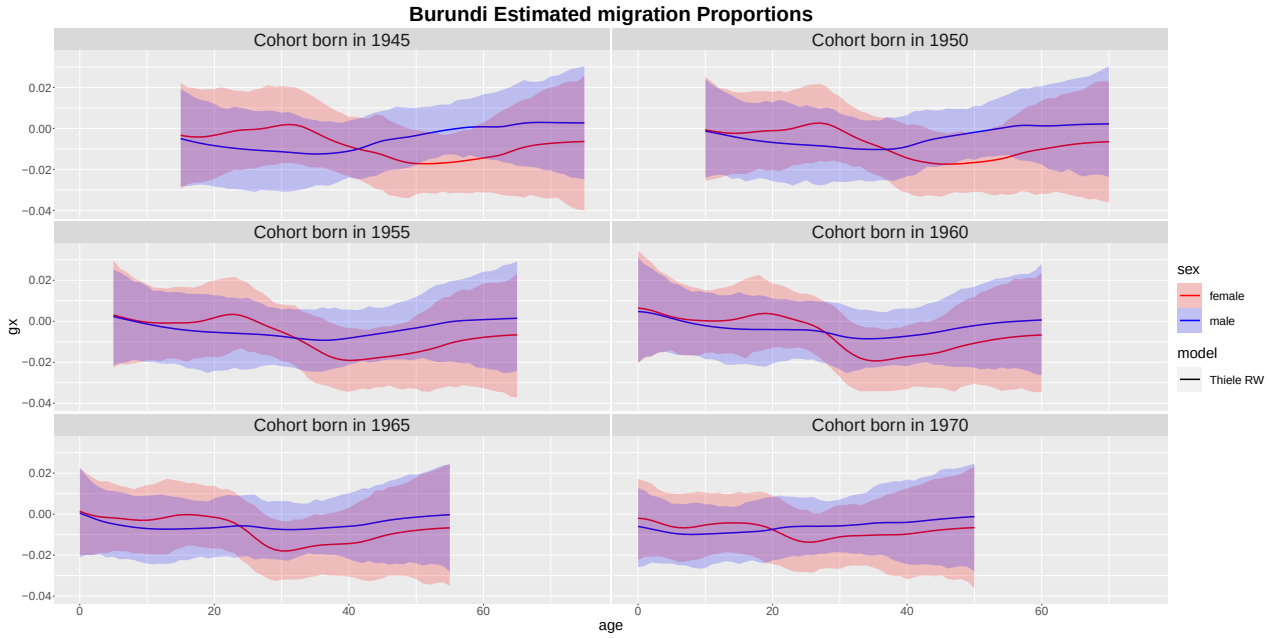

Figure 17: Migration

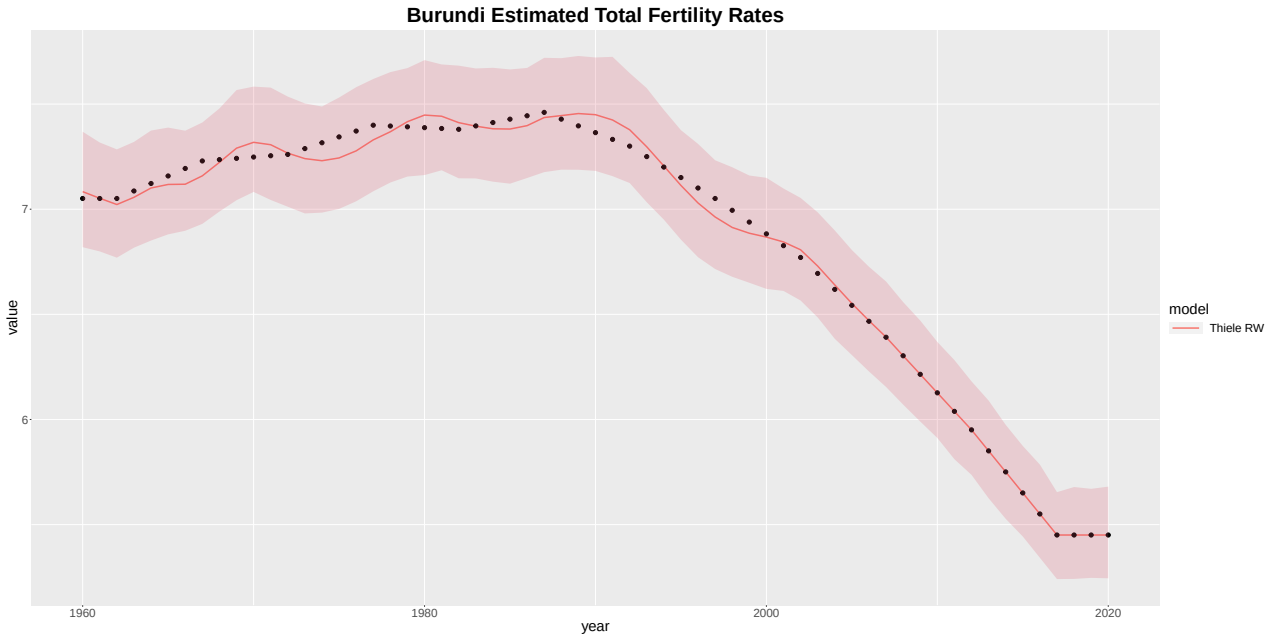

Figure 18: Total Fertility

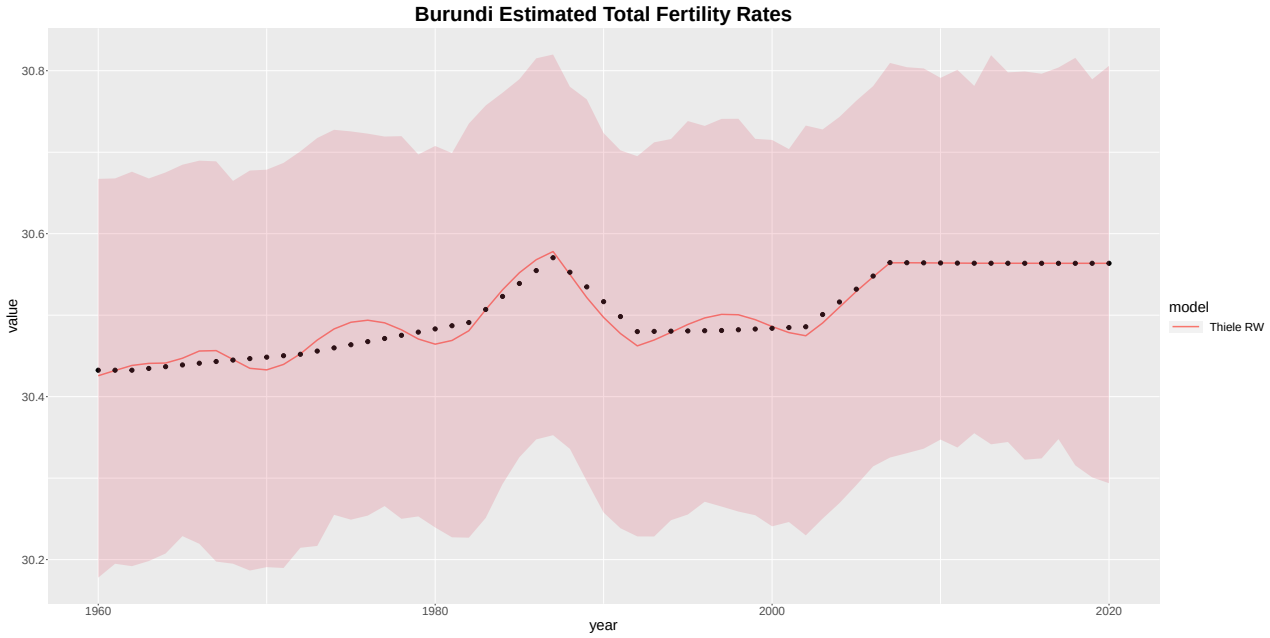

Figure 19: Mean age at births

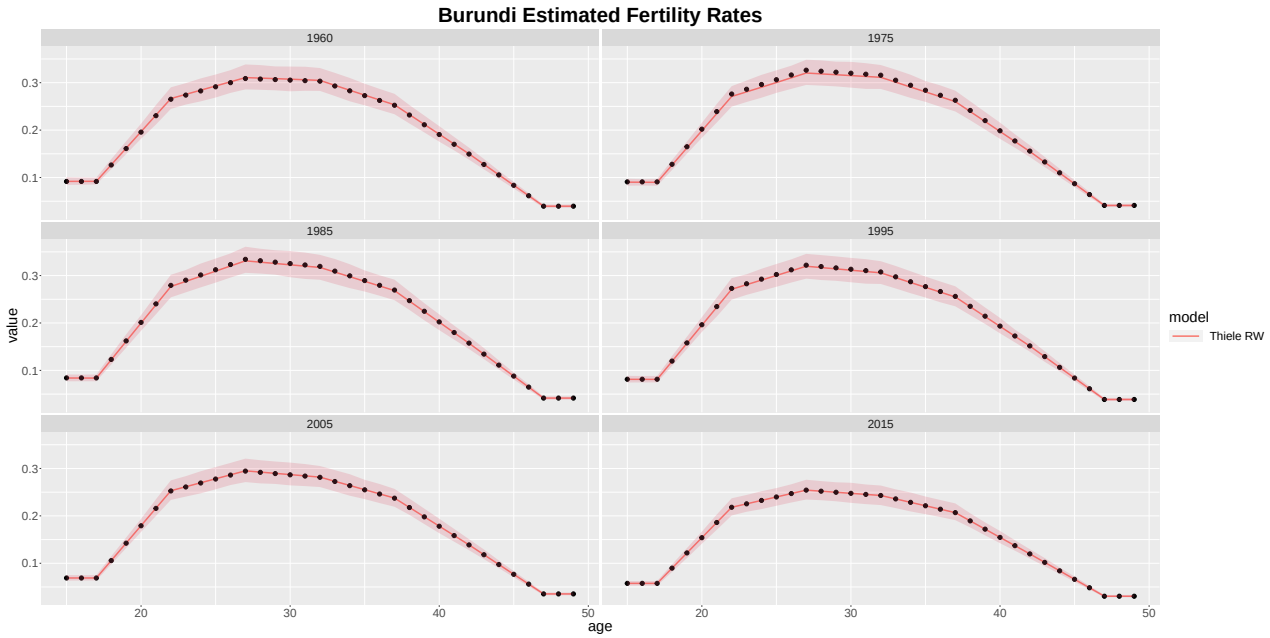

Figure 20: Fertility

Figure 21: Fertility