Eswatini

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

```
## # A tibble: 86 x 6
##      age `1966` `1986` `1997` `2007` `2017`
##    <dbl>  <dbl>  <dbl>  <dbl>  <dbl>  <dbl>
##  1     0  6964. 10944. 12396. 12316. 12763.
##  2     1  6376. 11954. 13167. 12627. 12728.
##  3     2  6594. 12469. 13811. 12844. 13042.
##  4     3  6623. 12746. 14308. 13027. 13356.
##  5     4  6691. 12586. 14538. 13211. 13400.
##  6     5  6504. 12066. 14587. 13468. 13192.
##  7     6  6335. 11476. 14355. 13640. 12860.
##  8     7  6171. 10917. 14108. 13753. 12766.
##  9     8  5937. 10495. 14062. 13834. 13024.
## 10     9  5669. 10157. 14041. 13798. 13262.
## # ... with 76 more rows
```

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

```
## # A tibble: 18 x 2
##      age `1976`
##    <dbl>  <dbl>
##  1     0 45361.
##  2     5 39820.
##  3    10 34111.
##  4    15 28627.
##  5    20 23750.
##  6    25 19219.
##  7    30 15322.
##  8    35 12596.
##  9    40 10397.
## 10    45  8481.
## 11    50  6721.
## 12    55  5267.
## 13    60  4240.
## 14    65  3274.
## 15    70  2533.
## 16    75  1893.
## 17    80   837.
## 18    85  1220.
```

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

```
## # A tibble: 86 x 6
##      age `1966` `1986` `1997` `2007` `2017`
##    <dbl>  <dbl>  <dbl>  <dbl>  <dbl>  <dbl>
##  1     0  6533. 10210. 12086. 12070. 12844.
##  2     1  5960. 11677. 12928. 12632. 12882.
##  3     2  6212. 12210. 13587. 12816. 13180.
##  4     3  6308. 12538. 14091. 12950. 13354.
##  5     4  6431. 12355. 14314. 13108. 13401.
##  6     5  6322. 11824. 14355. 13415. 13389.
```

```
##  7     6  6210. 11230. 14185. 13620. 13195.
##  8     7  6052. 10654. 13865. 13717. 12997.
##  9     8  5831. 10254. 13759. 13728. 12957.
## 10     9  5561.  9968. 13699. 13563. 13046.
## # ... with 76 more rows
```

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

```
## # A tibble: 18 x 2
##      age `1976`
##    <dbl>  <dbl>
##  1     0 43333.
##  2     5 38898.
##  3    10 32377.
##  4    15 23942.
##  5    20 17032.
##  6    25 13565.
##  7    30 12073.
##  8    35 10997.
##  9    40  9633.
## 10    45  8067.
## 11    50  6290.
## 12    55  4896.
## 13    60  3941.
## 14    65  2892.
## 15    70  2128.
## 16    75  1467.
## 17    80   379.
## 18    85   554.
```

Thiele log-Normal Hump Spline

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

```
##    log_tau2_logpop    log_tau2_logpop    log_tau2_logpop    log_tau2_logpop      log_lambda_fx      log
##        -0.65073307         6.39153238         0.34269696         6.36358698         5.47036420
##      log_lambda_tp           tp_slope        tp_params_5       tp_params_10     log_lambda_phi     log_
##         2.97082202        -0.04798443         0.16605187         0.43252930        12.60715461
##  log_lambda_lambda   log_lambda_delta log_lambda_epsilon
##         3.04187799         8.33232553         5.26806523
```

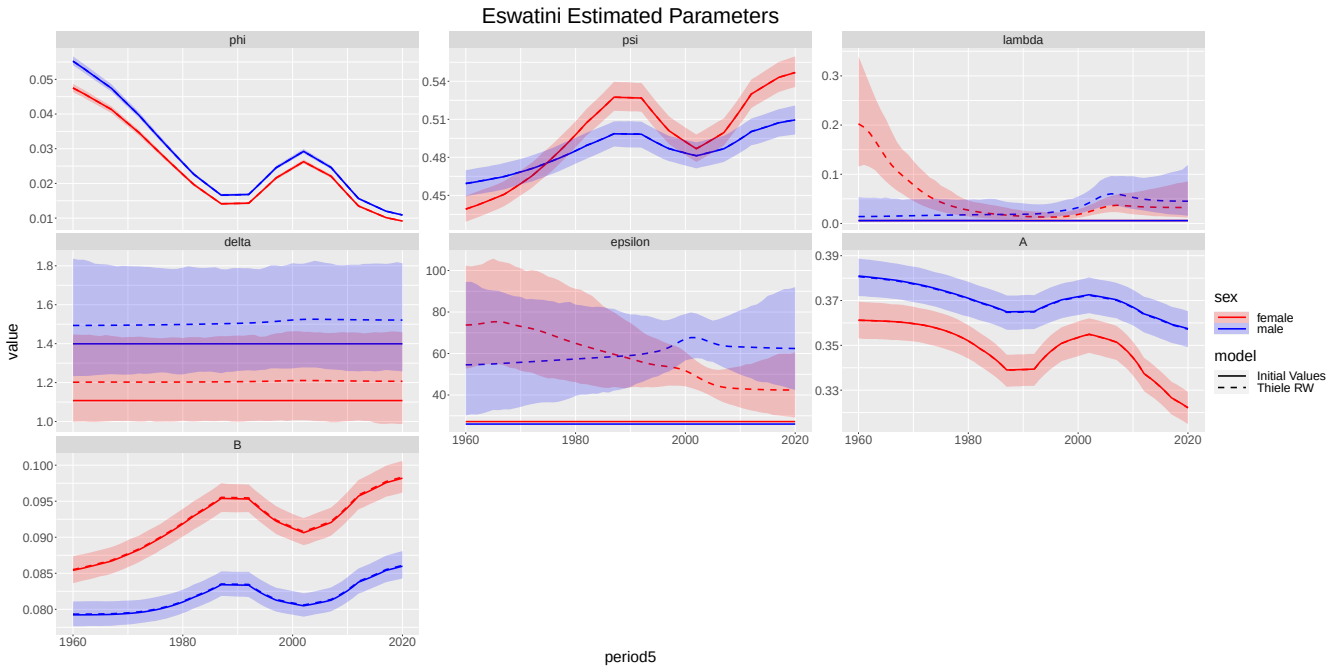

Figure 1: Estimated parameters

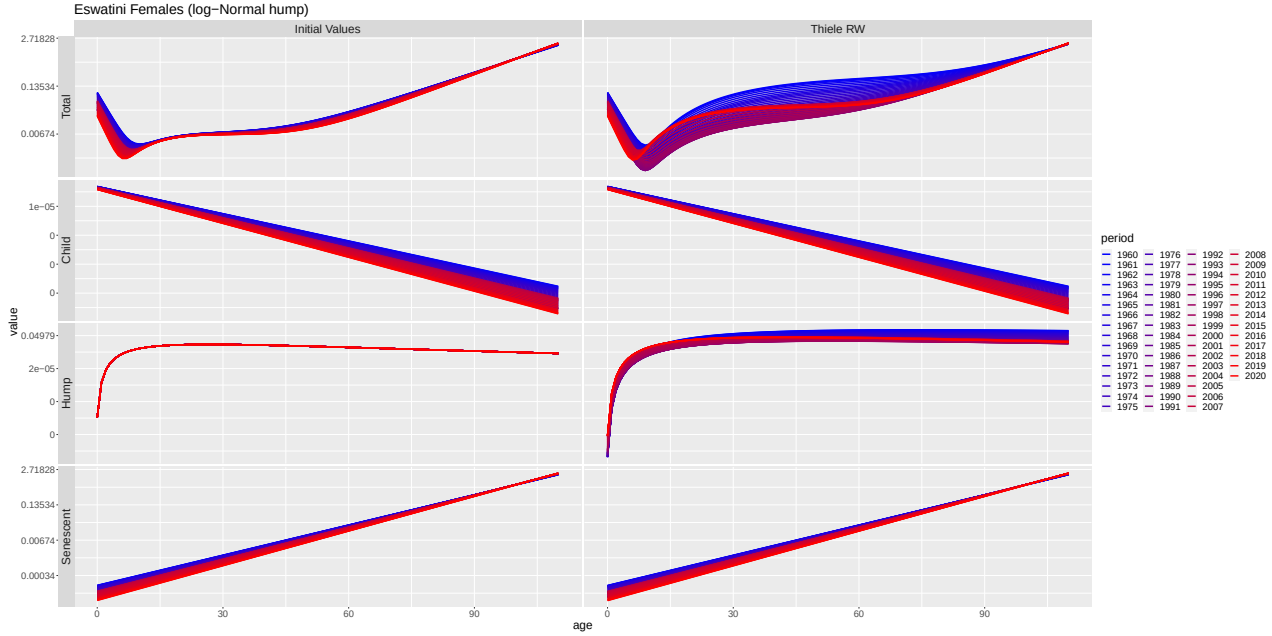

Figure 2: Thiele Decomposed

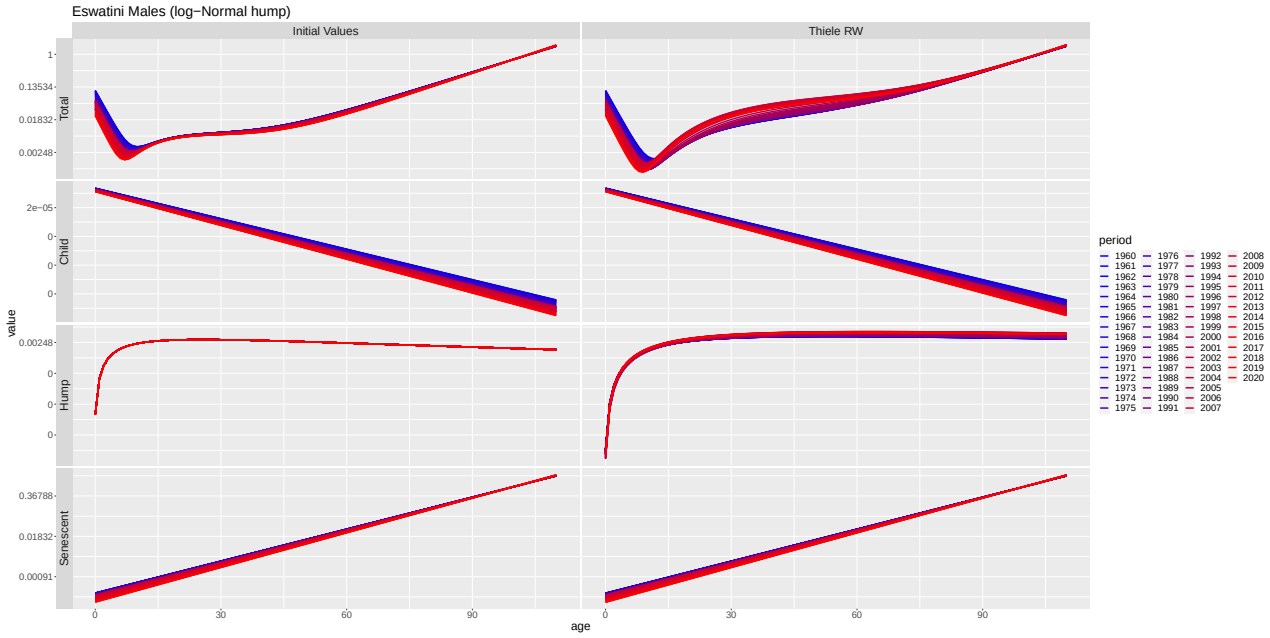

Figure 3: Thiele Decomposed

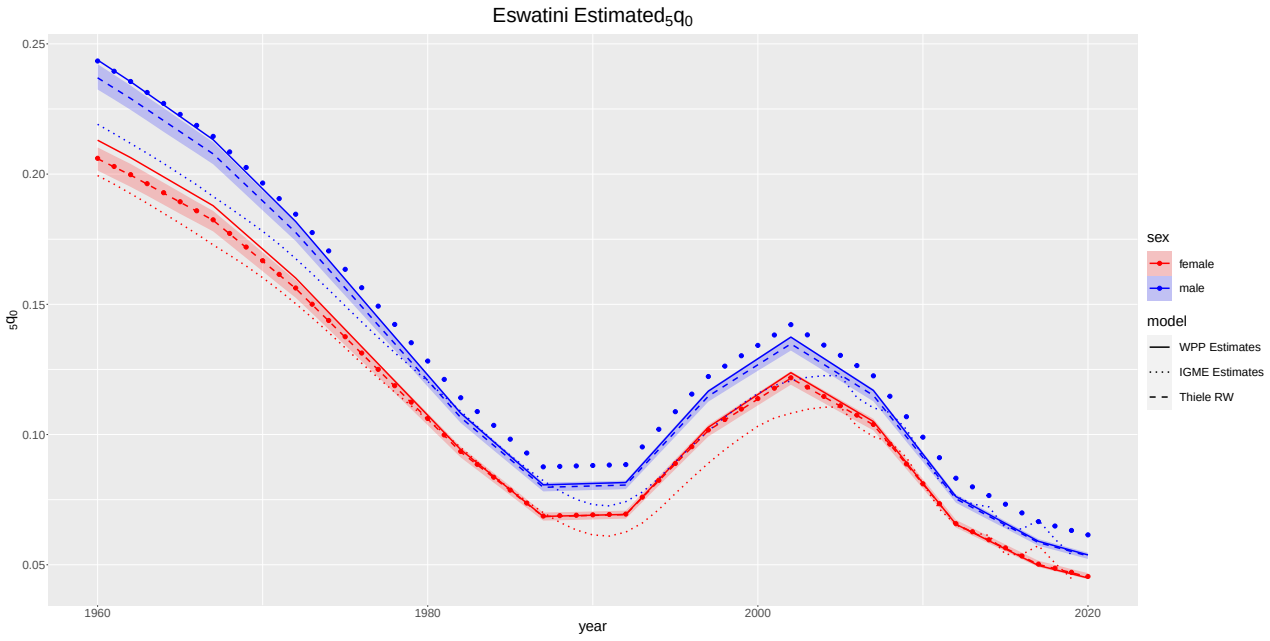

Figure 4: Estimated ${}_5q_0$

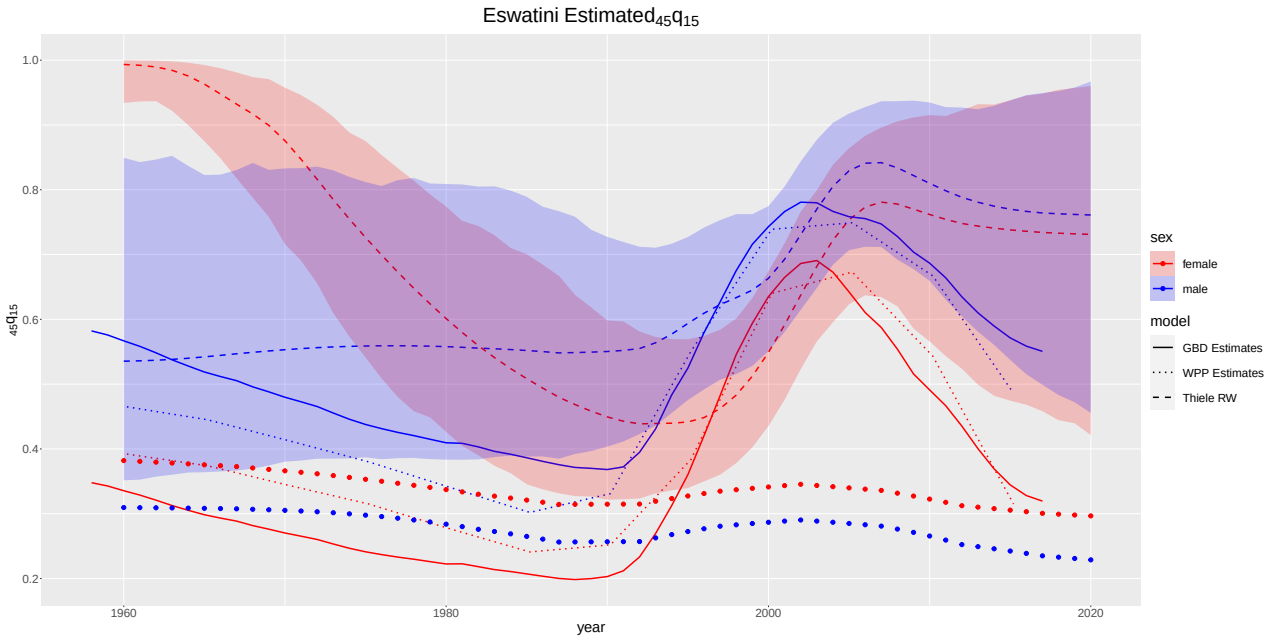

Figure 5: Estimated ${}_{45}q_{15}$

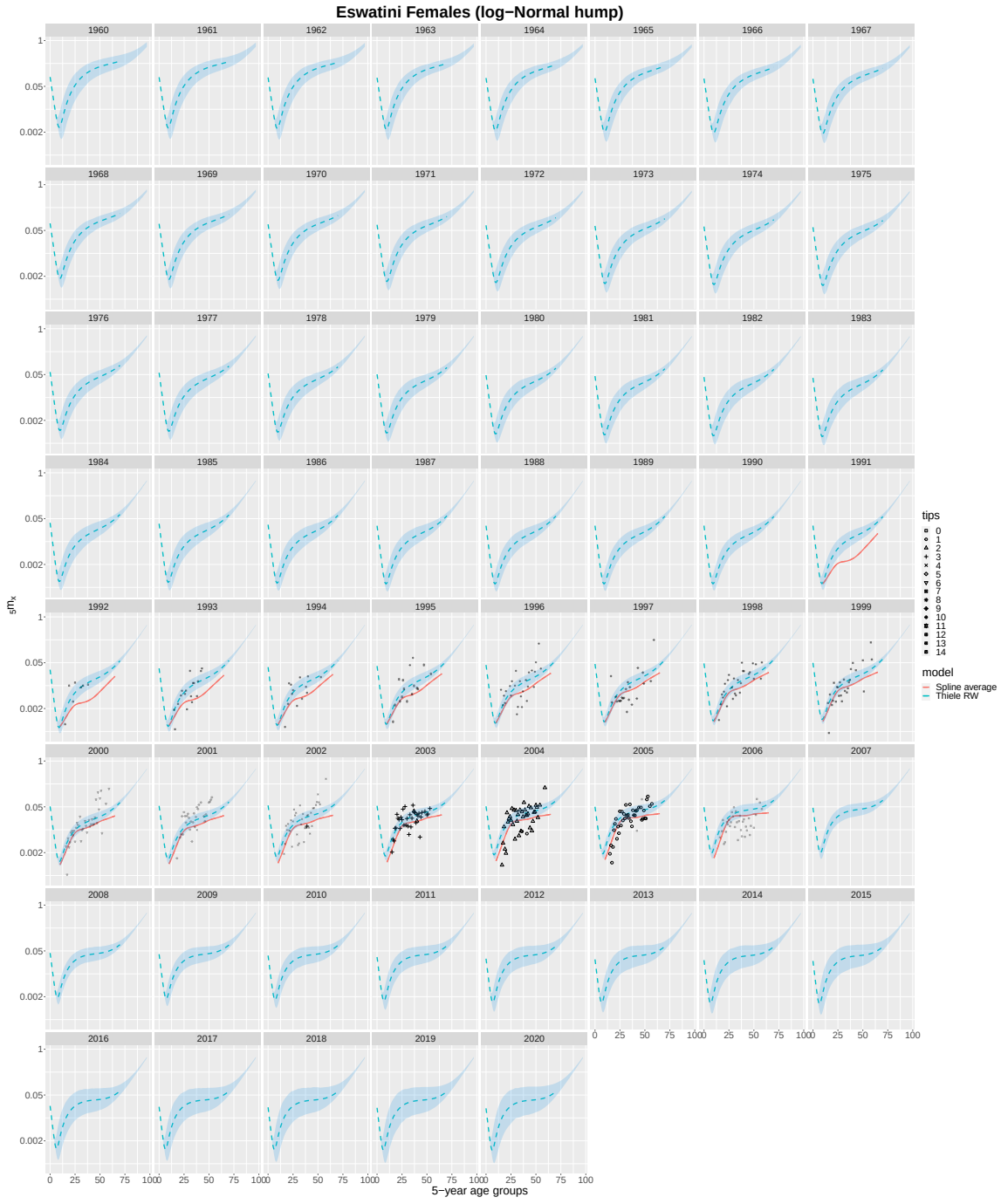

Figure 6: Mortality Schedules

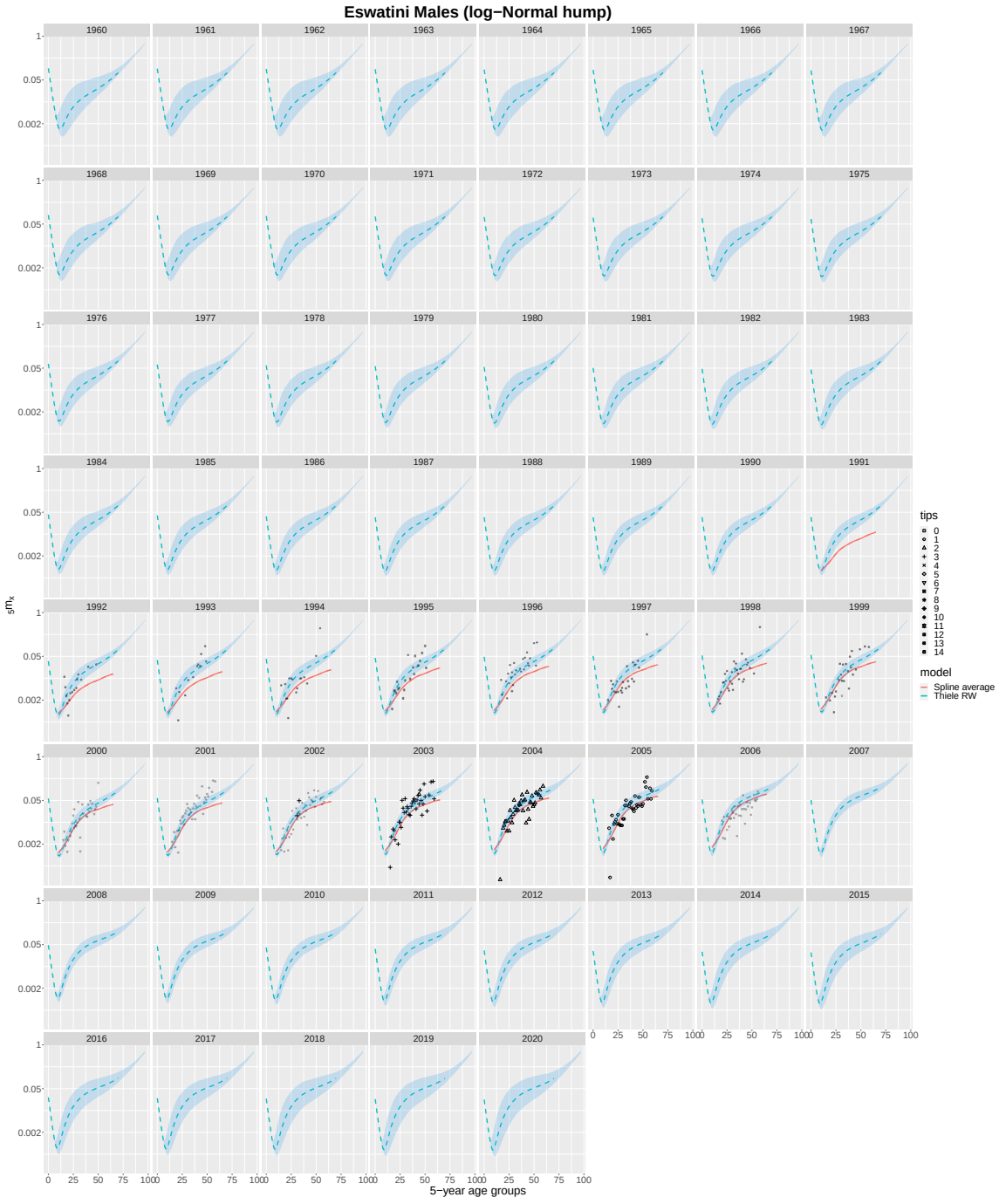

Figure 7: Mortality Schedules

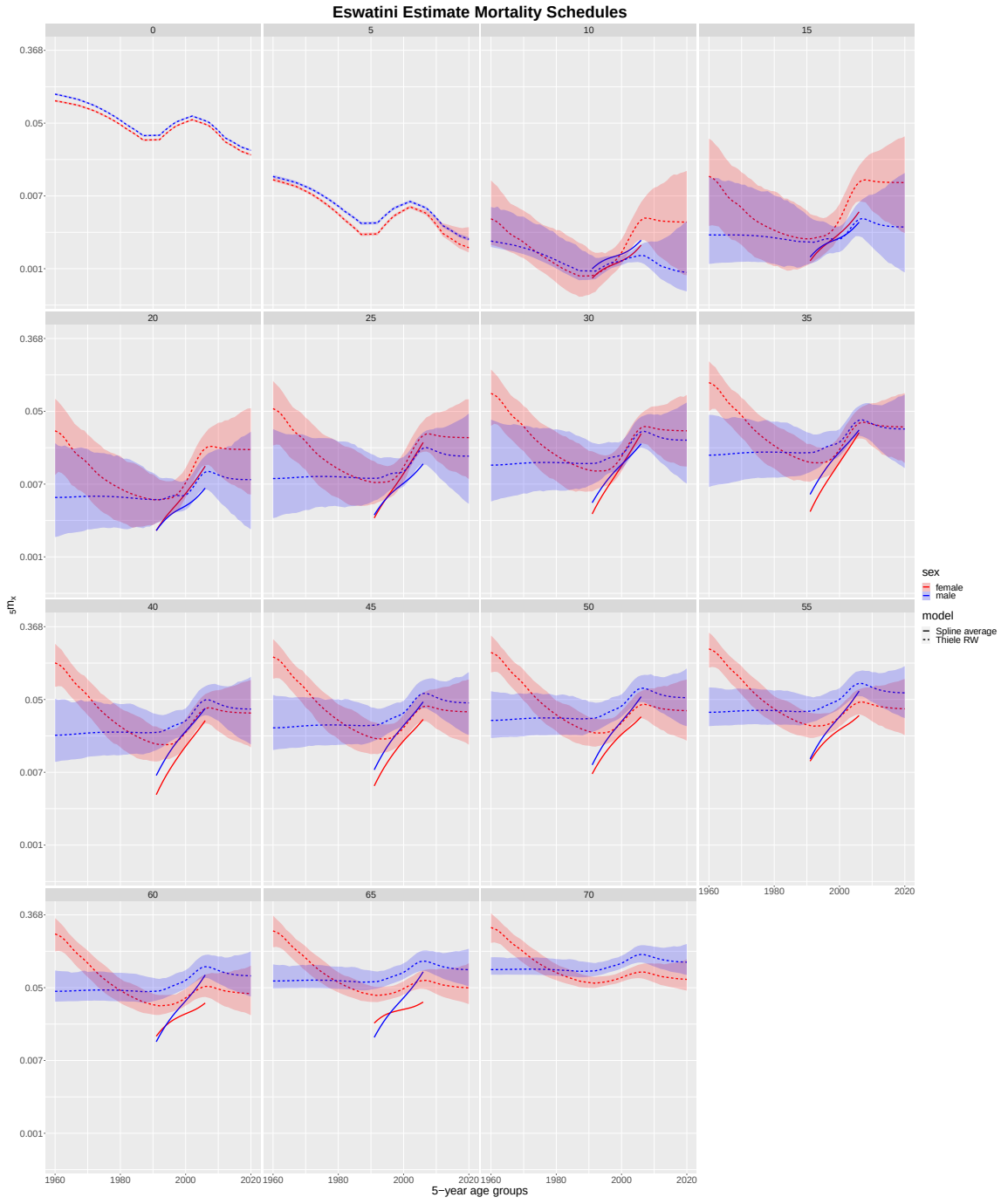

Figure 8: Mortality Schedules

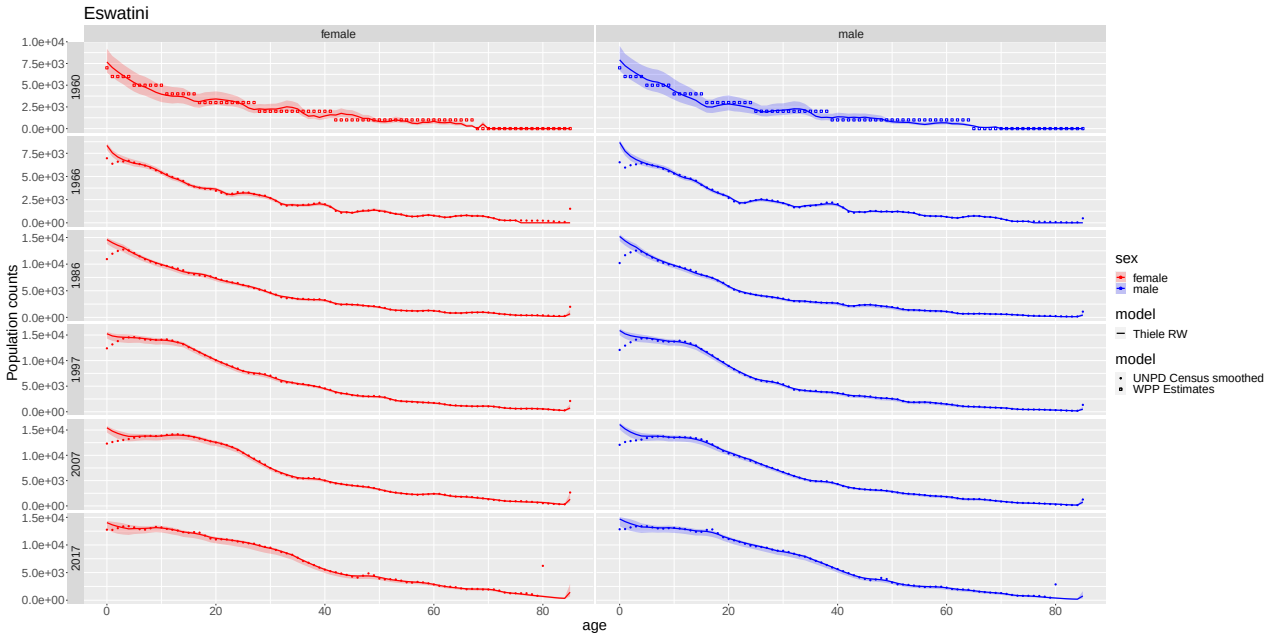

Figure 9: Population

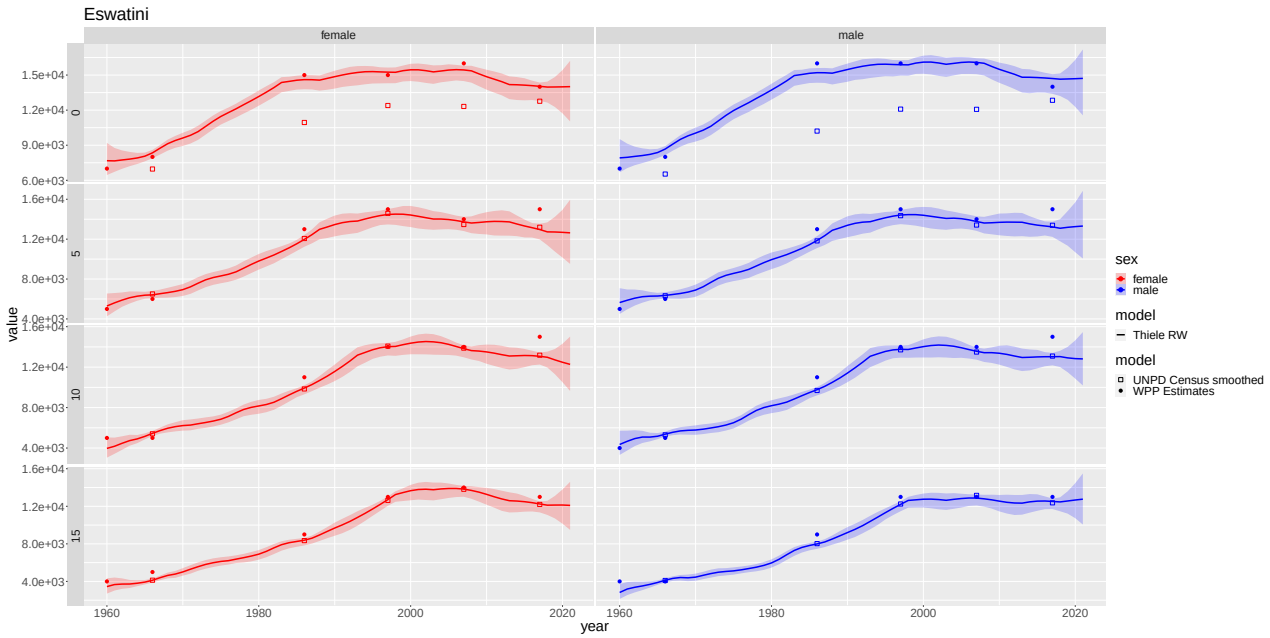

Figure 10: Population

Figure 11: Population

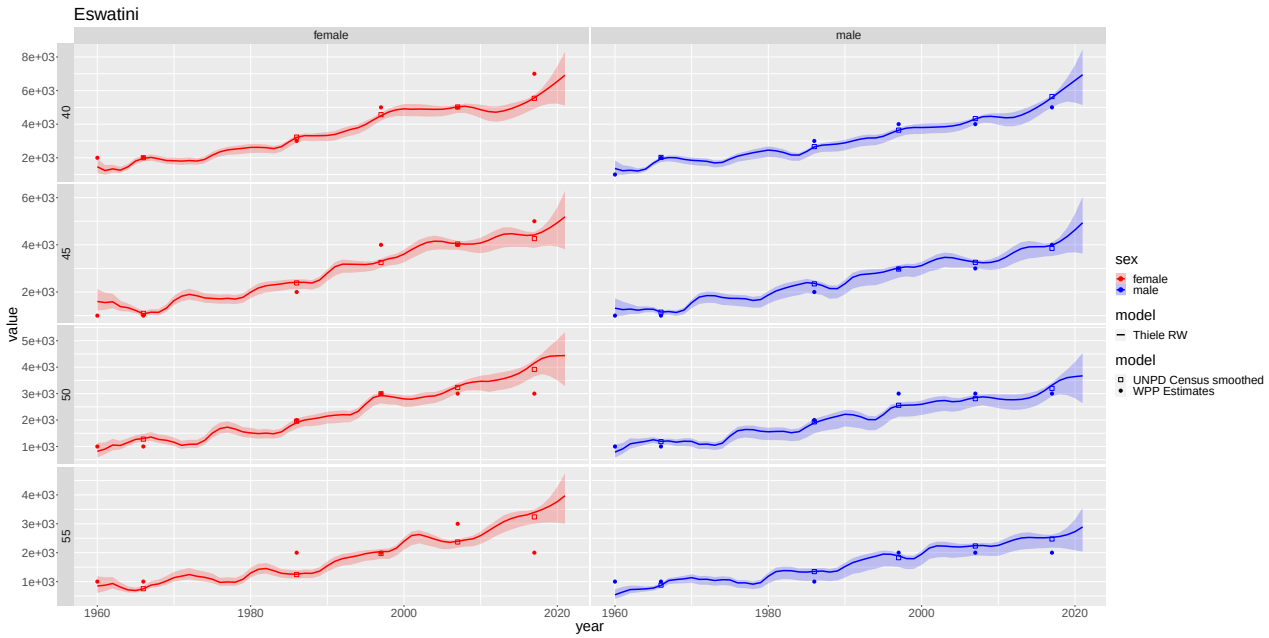

Figure 12: Population

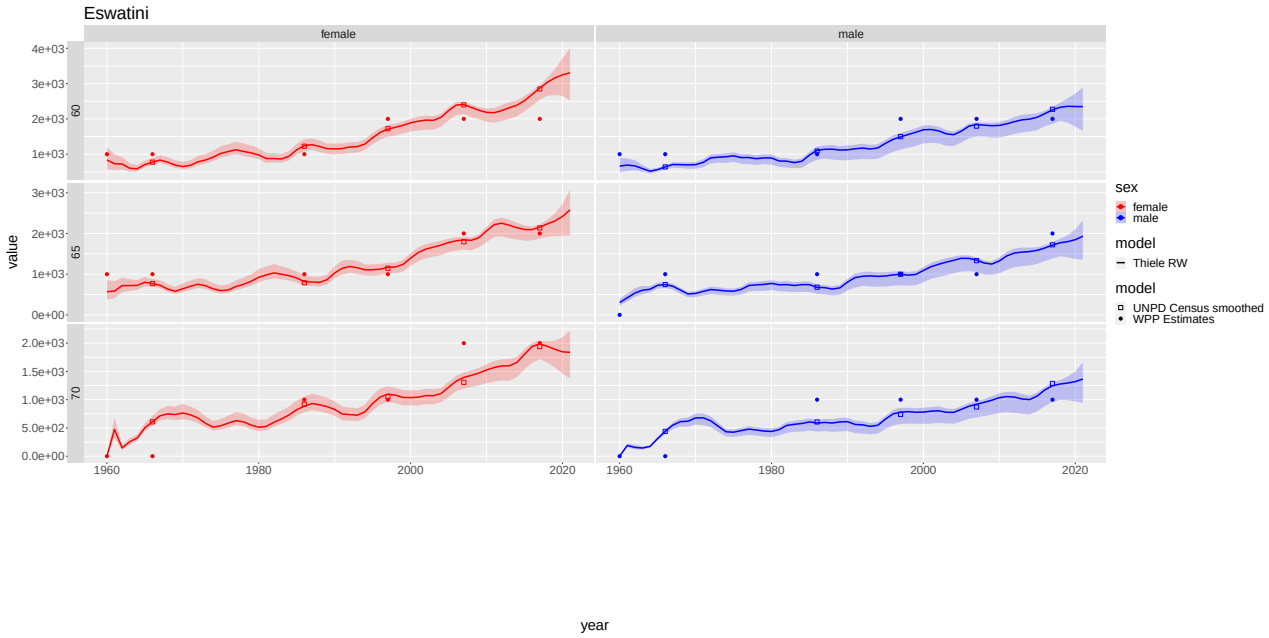

Figure 13: Population

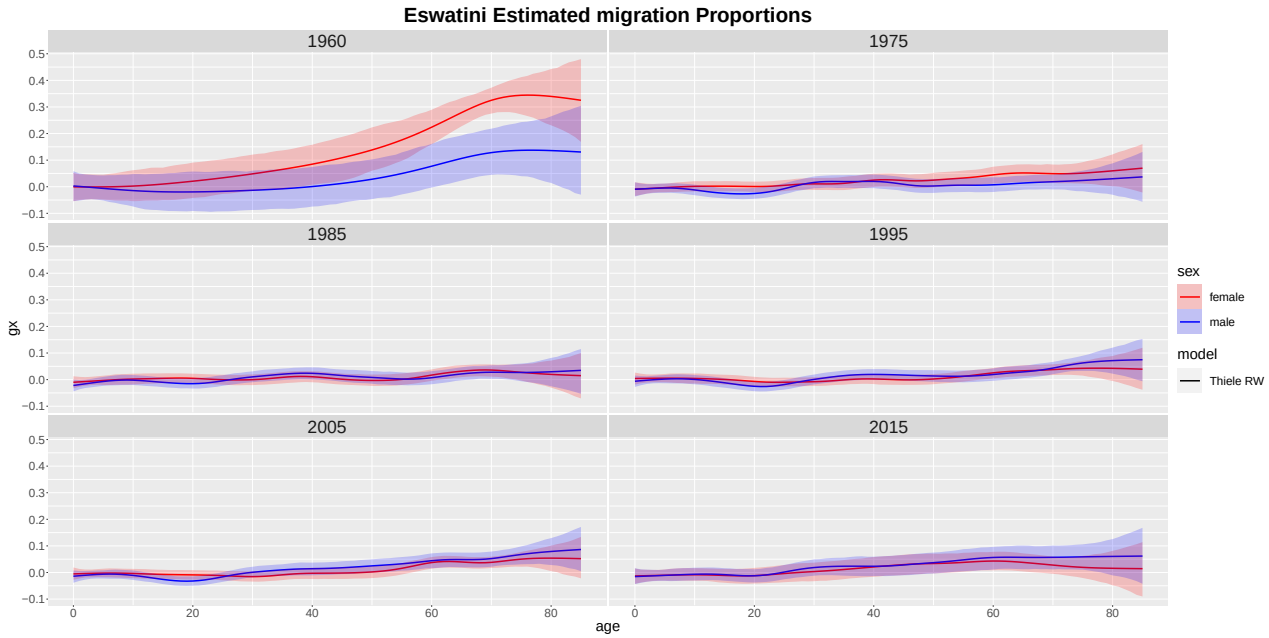

Figure 14: Migration

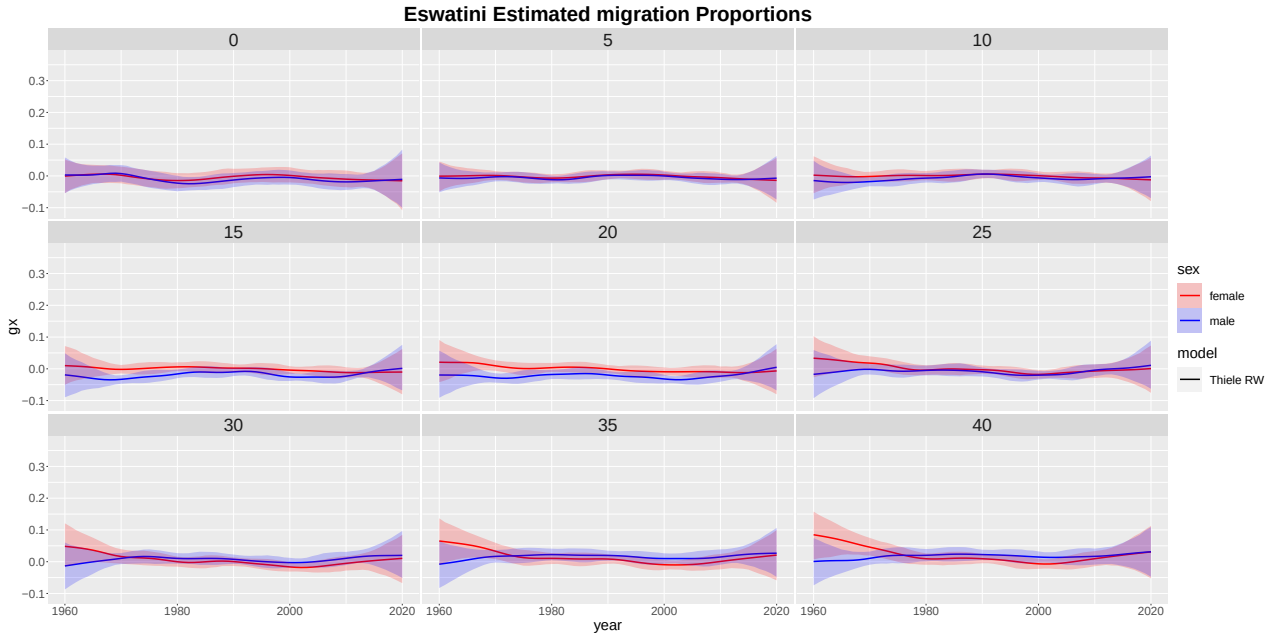

Figure 15: Migration

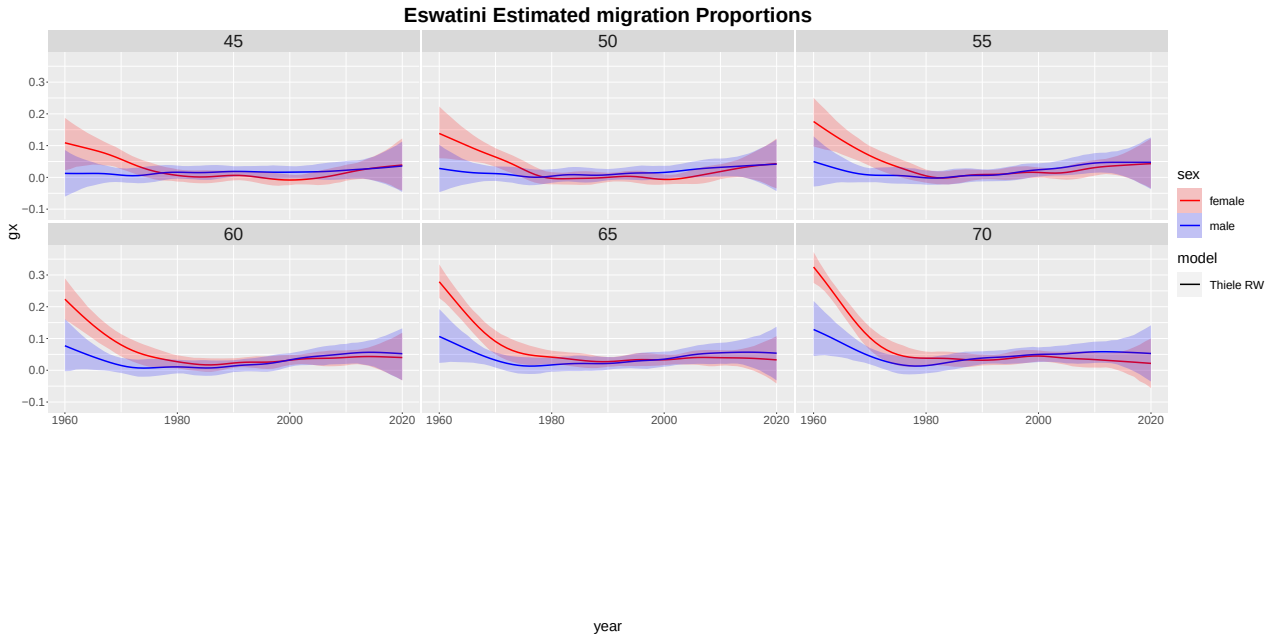

Figure 16: Migration

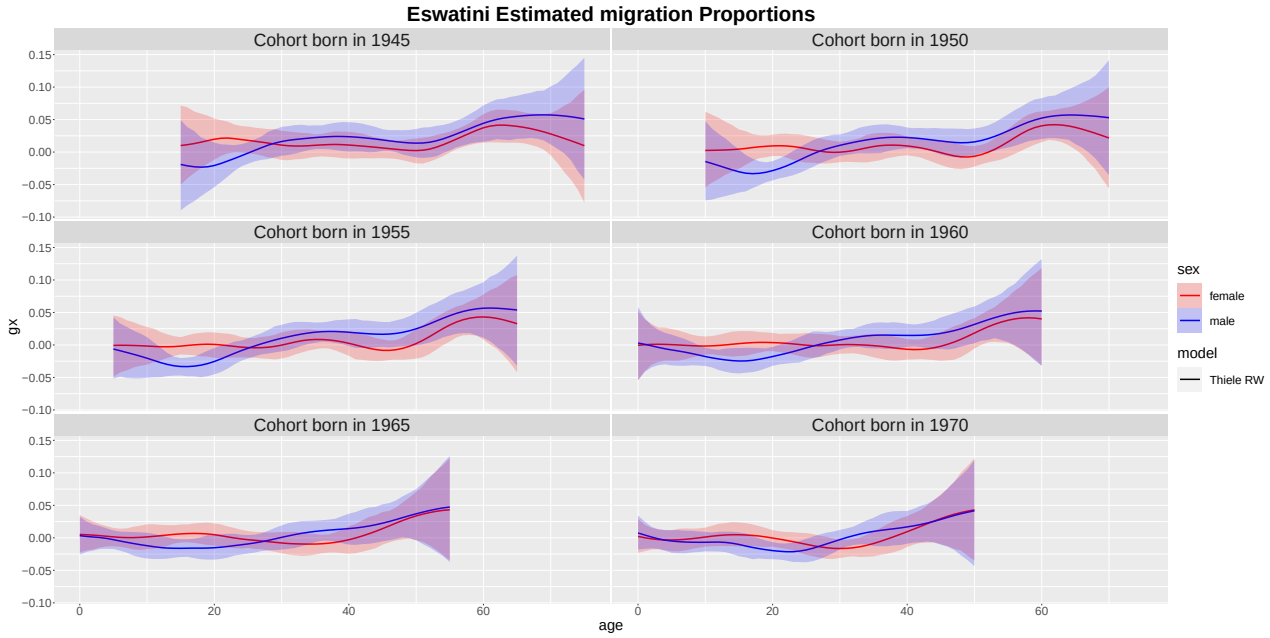

Figure 17: Migration

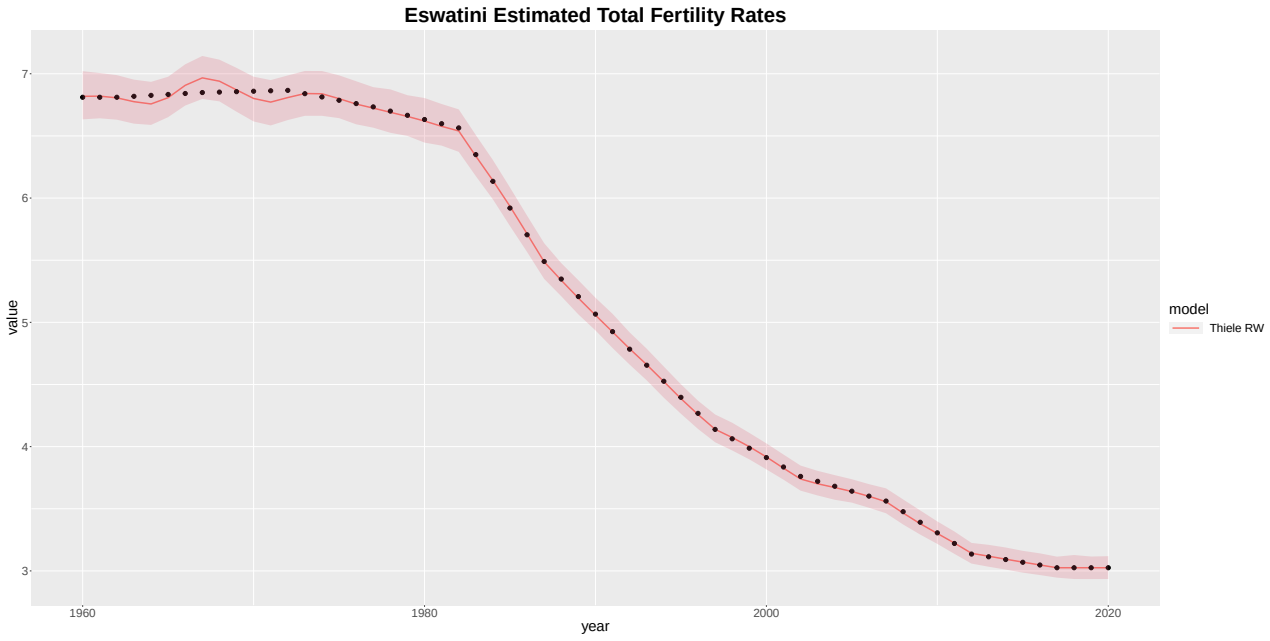

Figure 18: Total Fertility

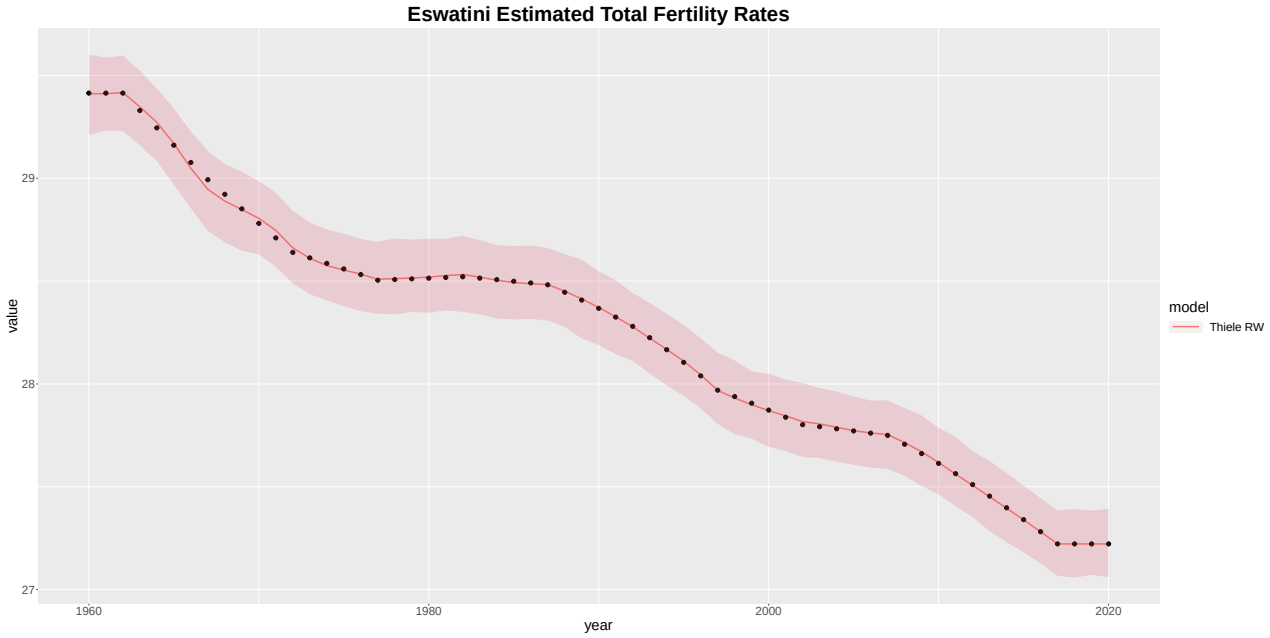

Figure 19: Mean age at births

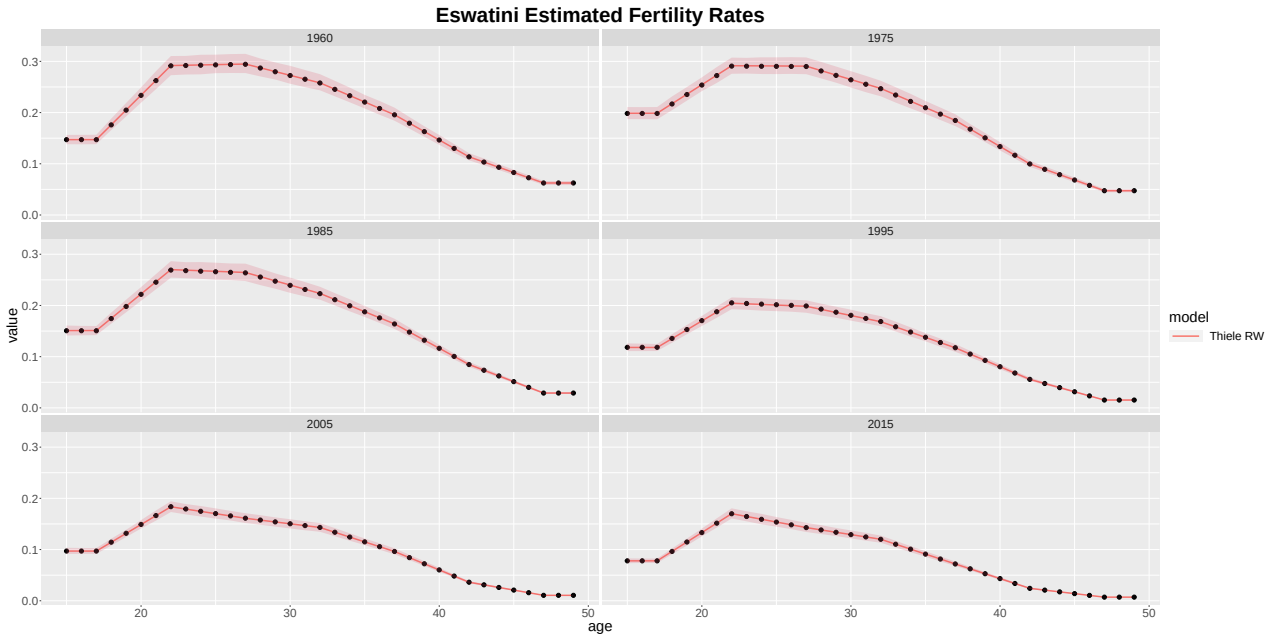

Figure 20: Fertility

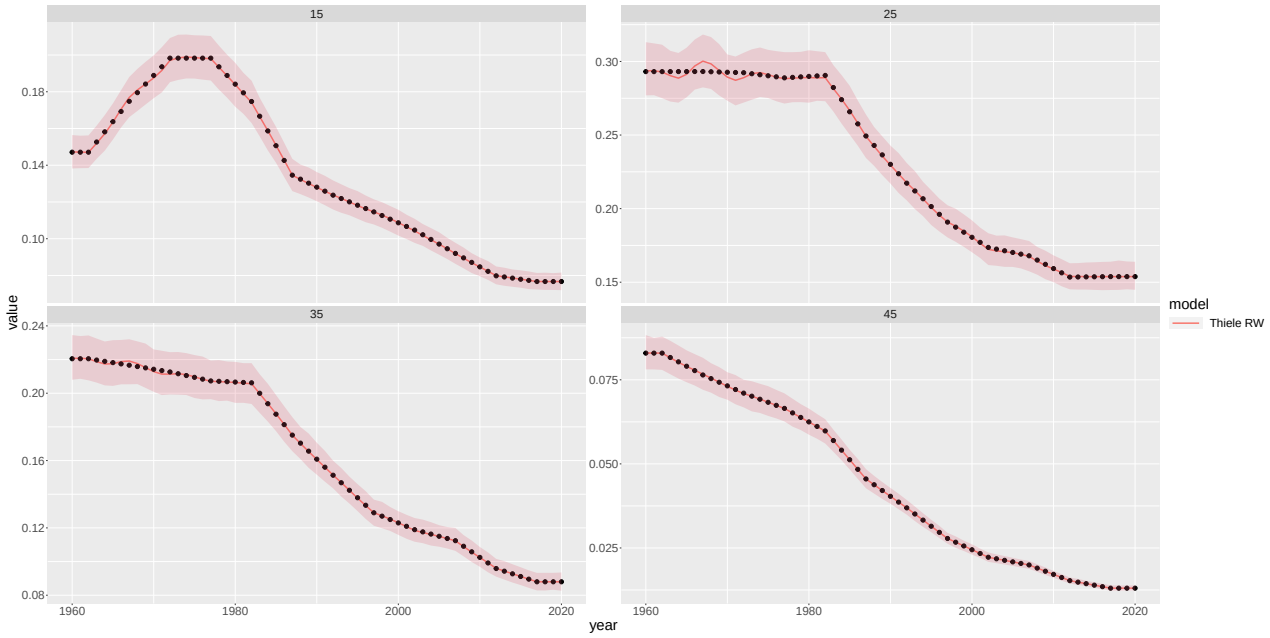

Figure 21: Fertility