

# 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.
```

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## 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_f	log_tau2_logpop_f	log_tau2_logpop_m	log_tau2_logpop_m
##	6.46380239	-0.04649012	6.49724485	-0.04649012
##	log_tau2_gx_m	log_lambda_gx_age_f	log_lambda_gx_age_m	log_lambda_gx_age_m
##	1.91188425	7.12725169	5.59518837	8.12725169
##	log_lambda_gx_agemtime_m	log_lambda_tp	log_lambda_tp_0_inflated_sd	log_disp
##	6.90775220	2.24344639	0.91485482	1.24344639
##	log_marginal_prec_psi_f	log_marginal_prec_A_f	log_marginal_prec_B_f	log_marginal_prec_B_f
##	6.81288968	6.81623415	6.86752982	6.81623415
##	log_marginal_prec_B_m	log_lambda_phi_f	log_lambda_psi_f	log_lambda_phi_f
##	6.73628388	4.30955245	4.30856791	1.30955245
##	log_lambda_A_f	log_lambda_B_f	log_lambda_phi_m	log_lambda_phi_m
##	4.30668097	4.30594077	4.30628613	4.30594077
##	log_lambda_epsilon_m	log_lambda_A_m	log_lambda_B_m	logit_lambda_slope_rho_m
##	2.61314041	4.30705080	4.30758574	0.30705080
##	logit_lambda_slope_rho_m	logit_delta_slope_rho_m	logit_epsilon_slope_rho_m	
##	-3.19058392	1.91517342	1.08569151	

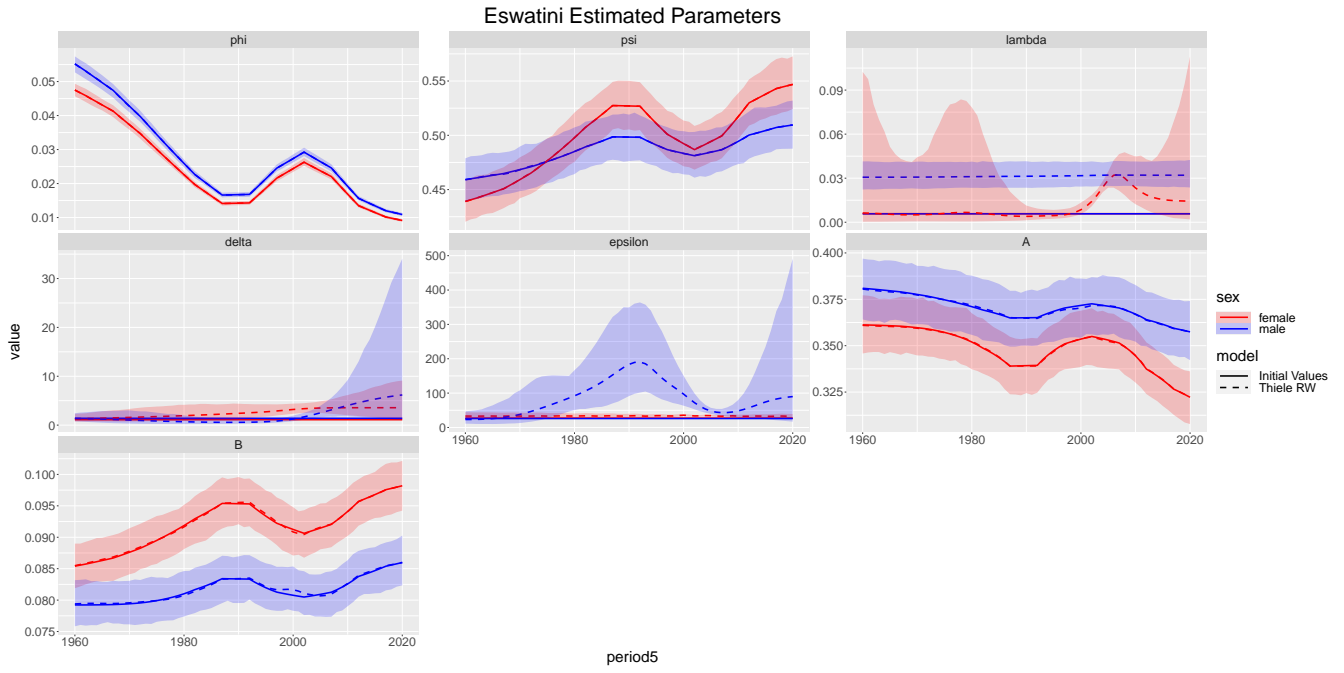


Figure 1: Estimated parameters

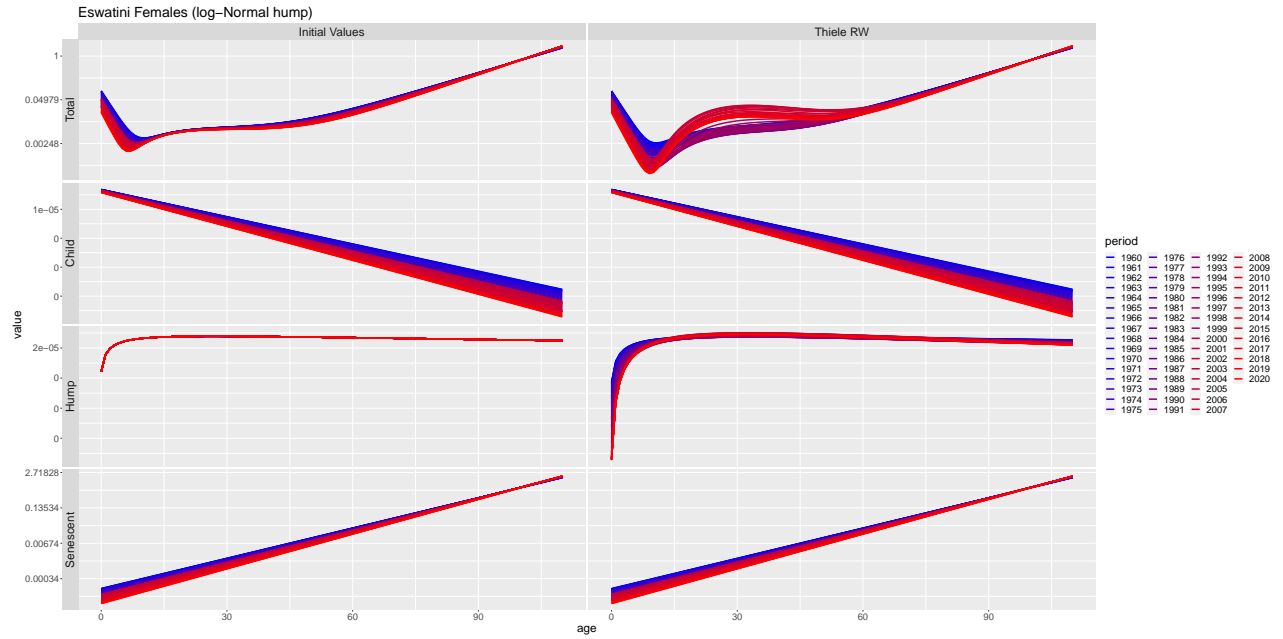


Figure 2: Thiele Decomposed

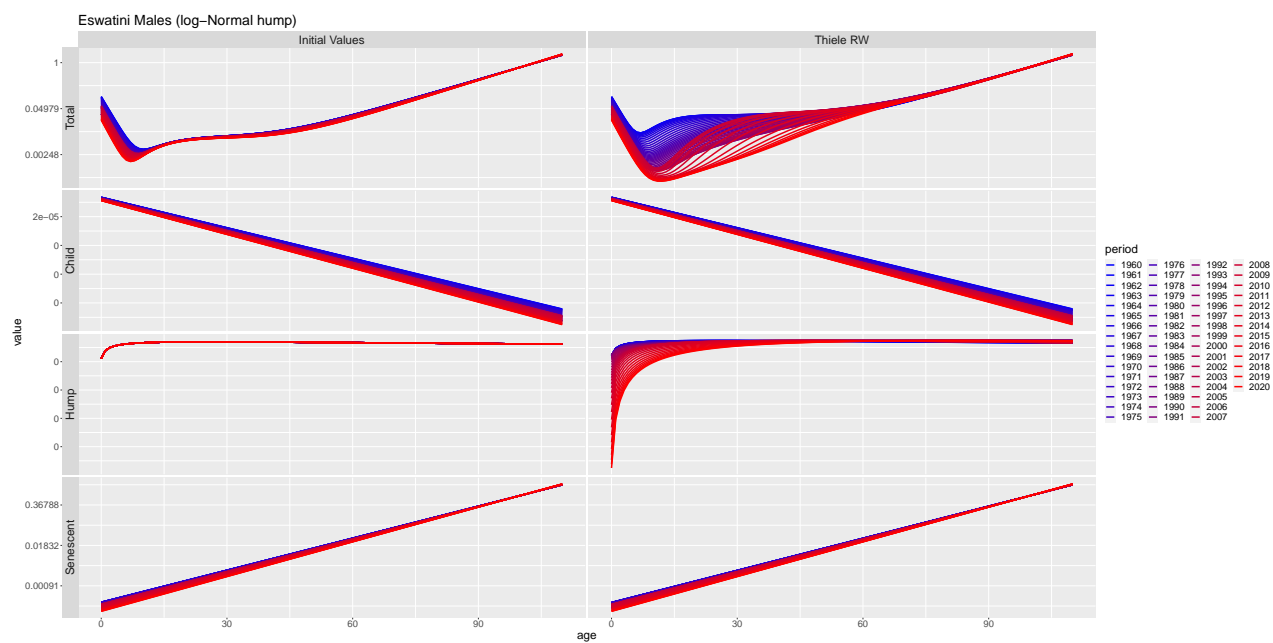


Figure 3: Thiele Decomposed

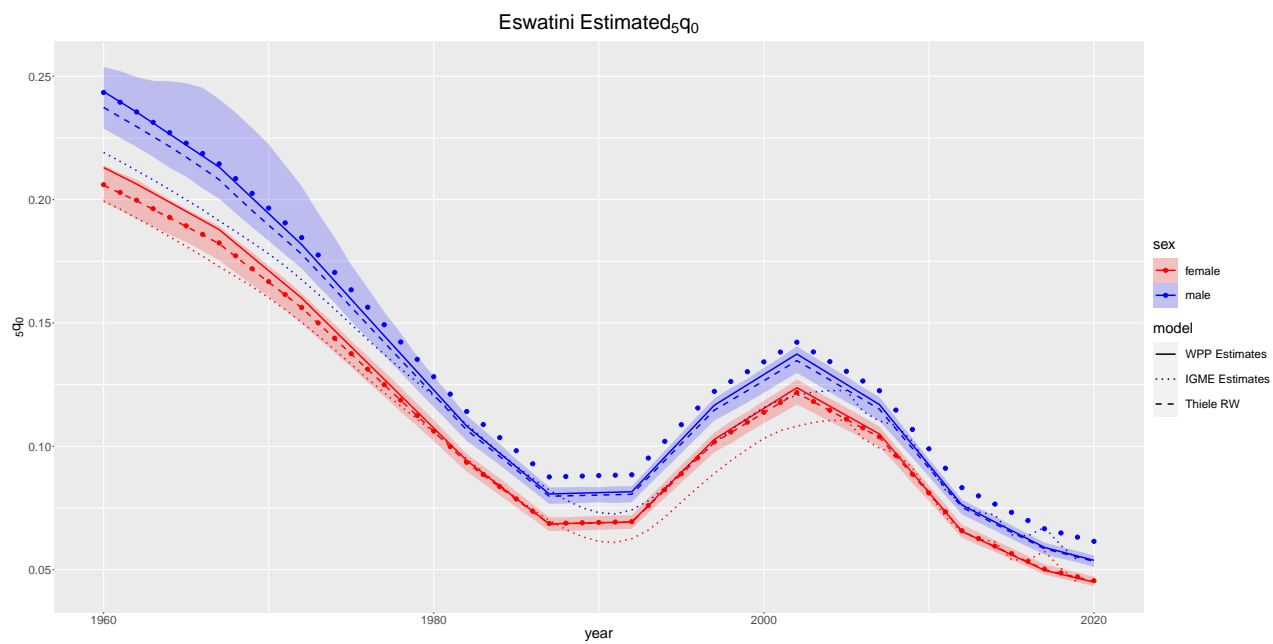


Figure 4: Estimated  ${}_5q_0$

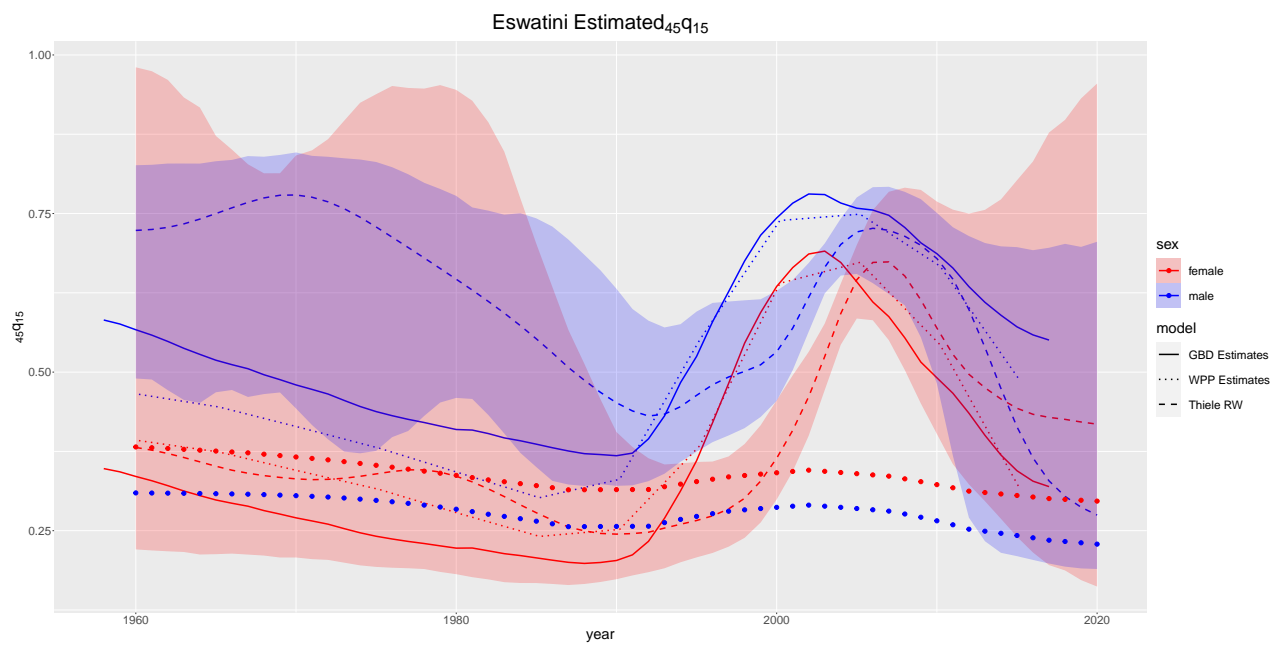


Figure 5: Estimated  $_{45}q_{15}$

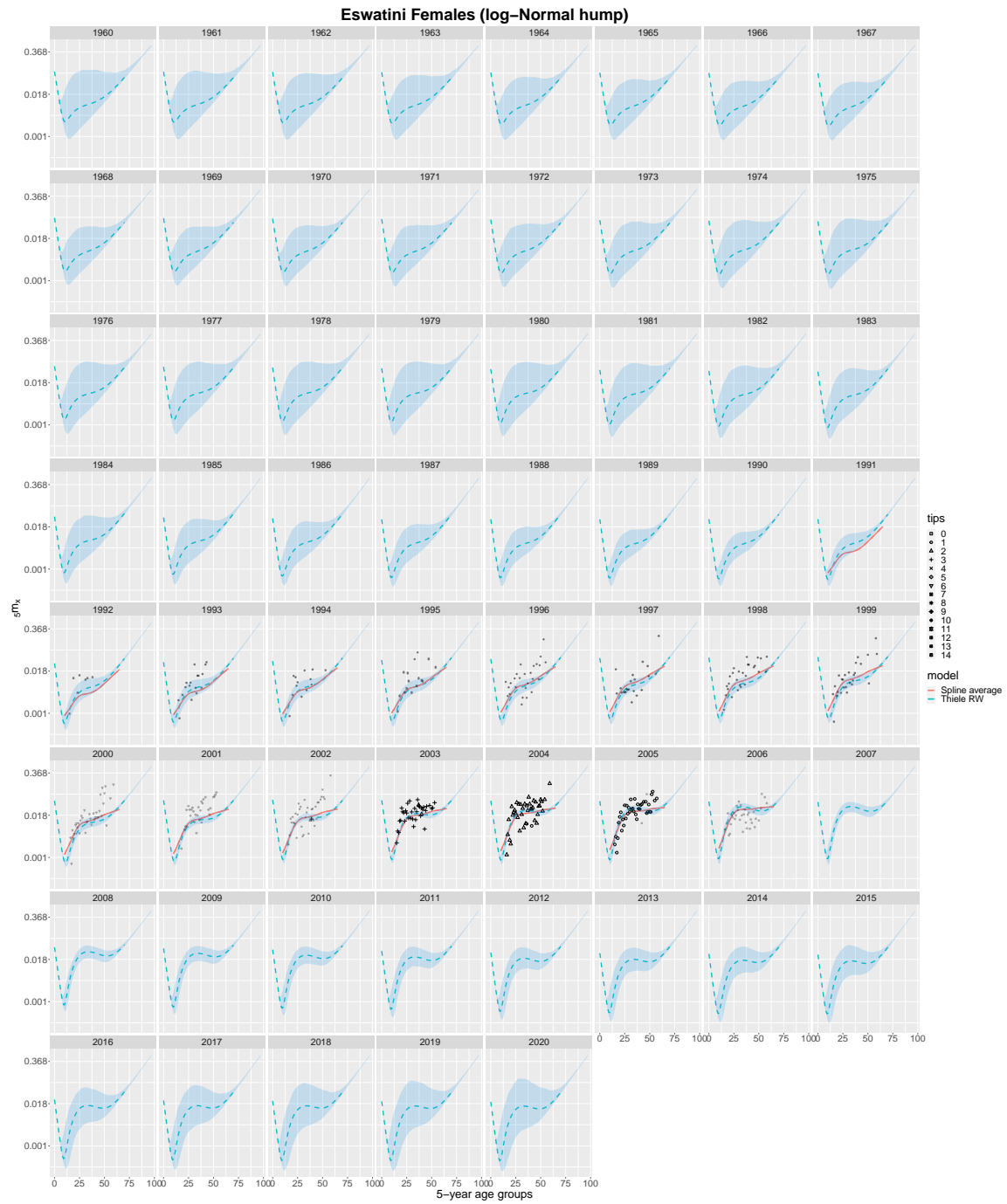


Figure 6: Mortality Schedules

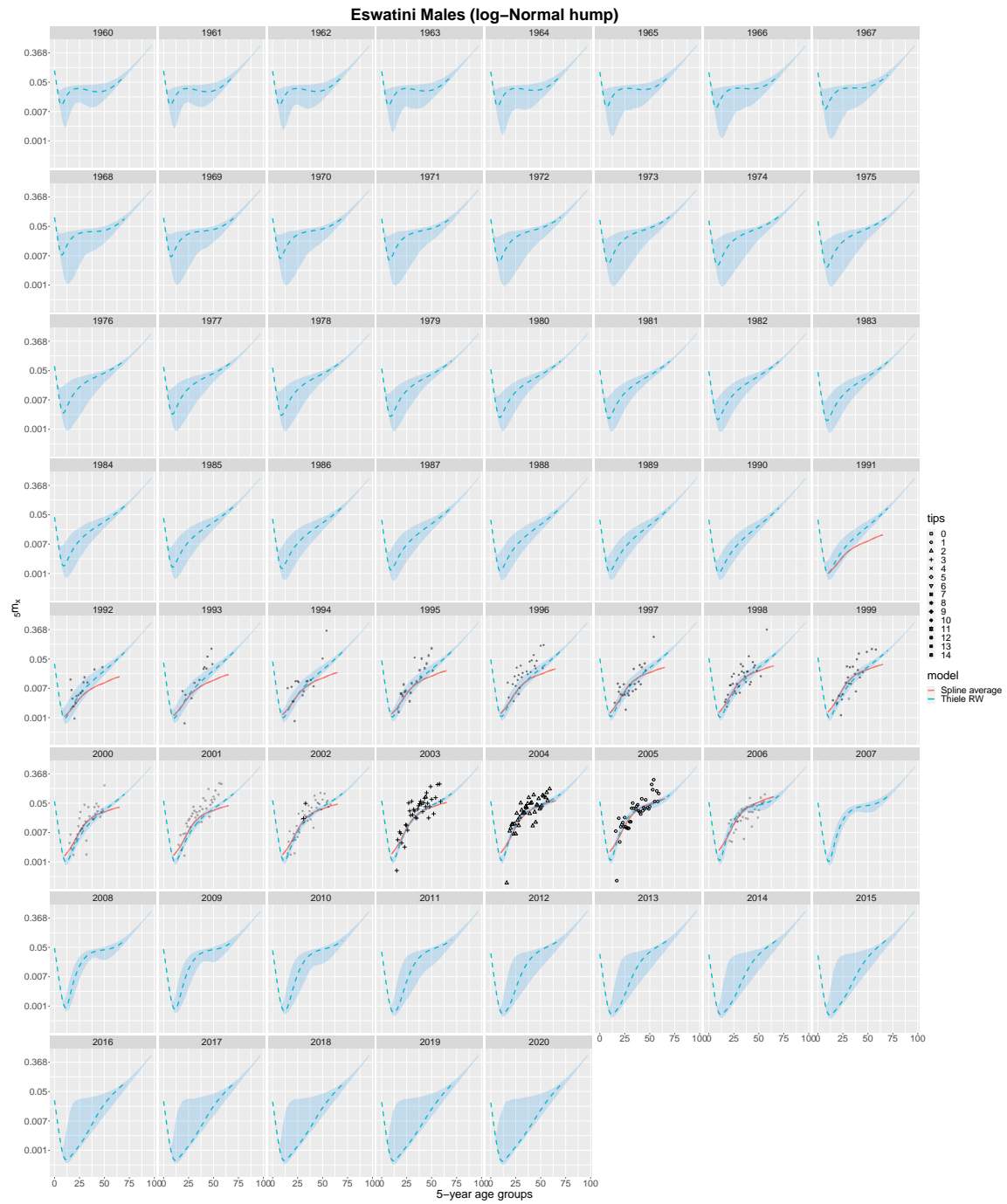


Figure 7: Mortality Schedules

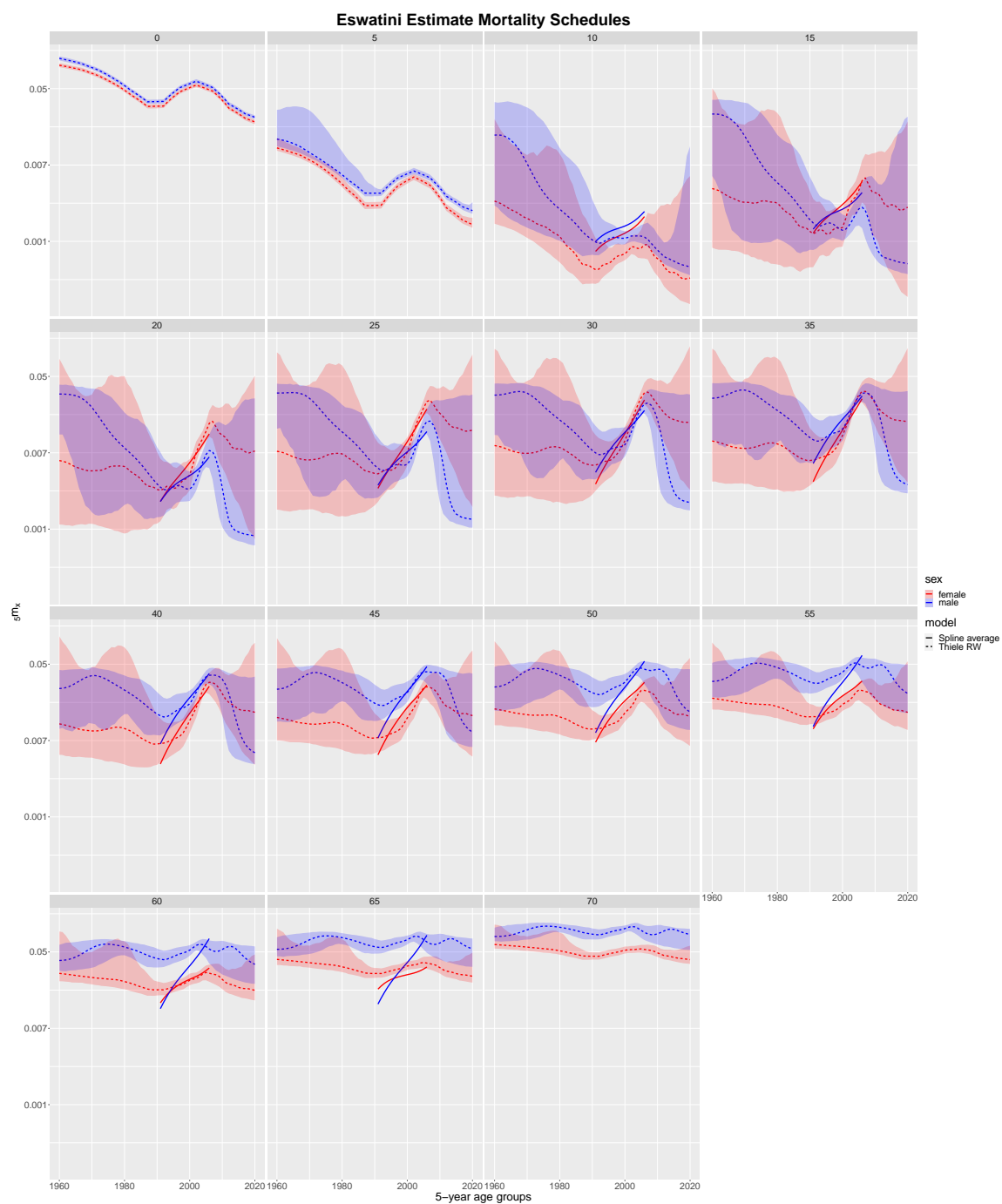


Figure 8: Mortality Schedules



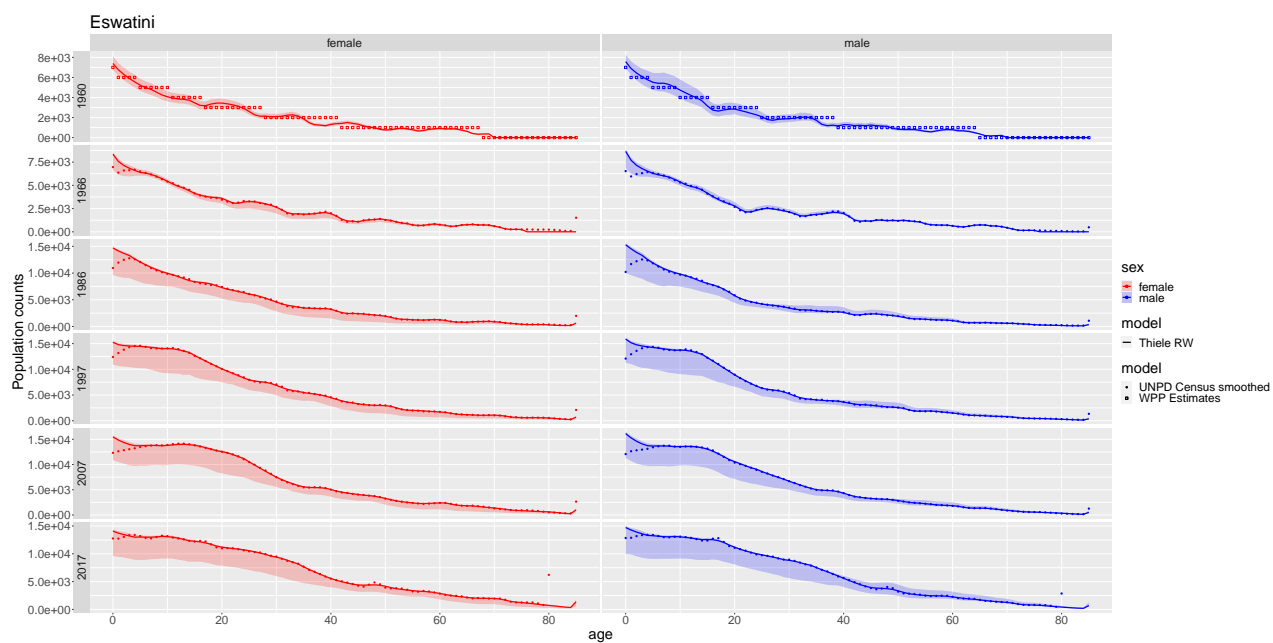


Figure 9: Population

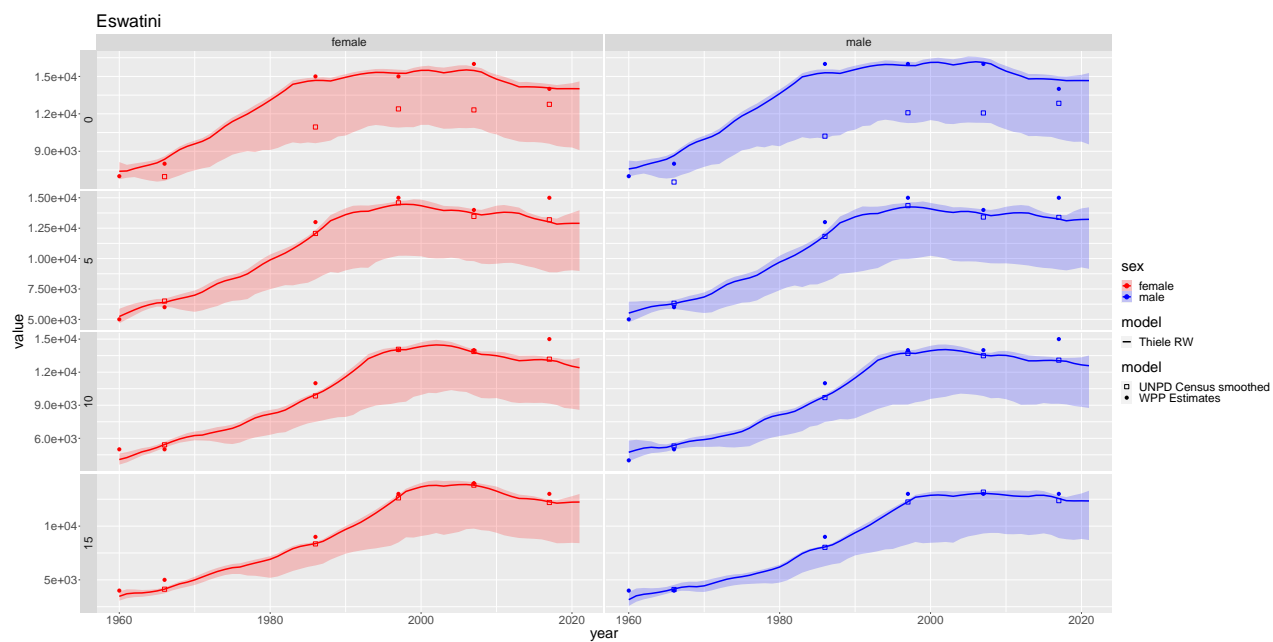


Figure 10: Population

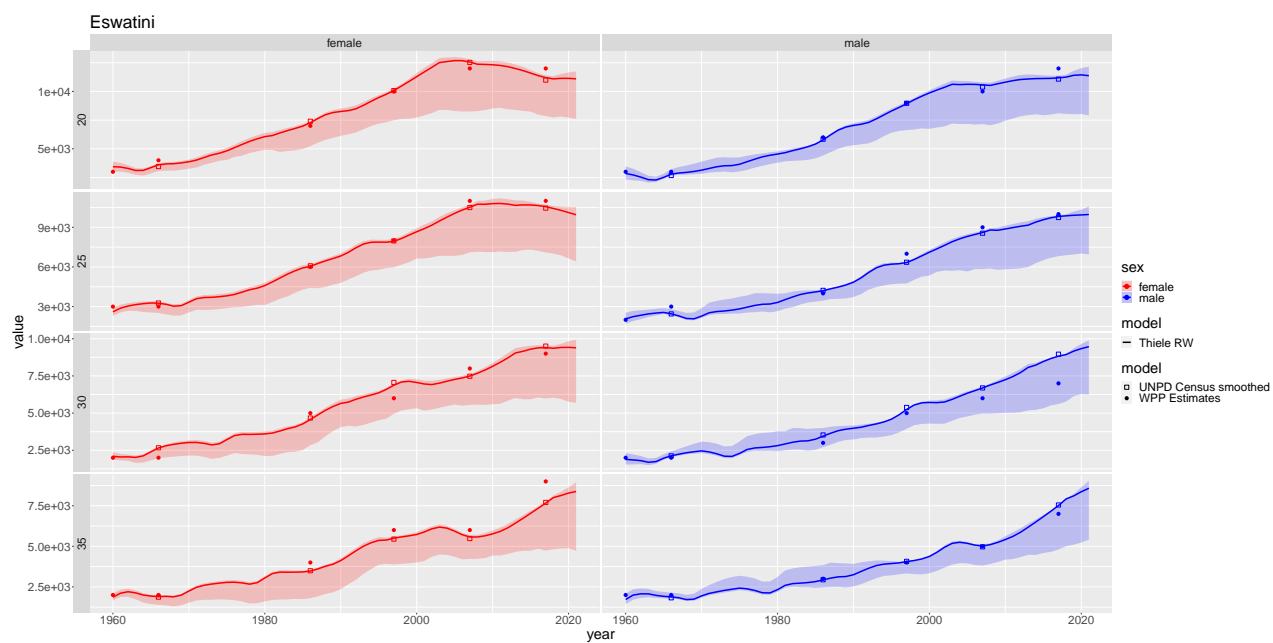


Figure 11: Population

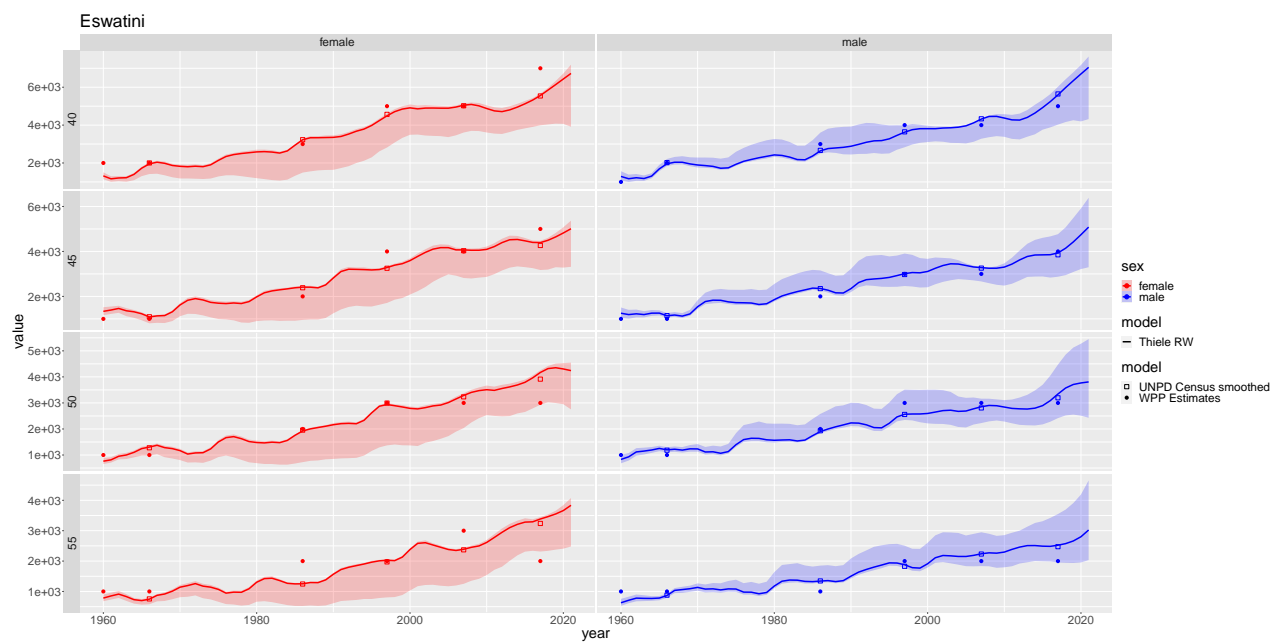


Figure 12: Population

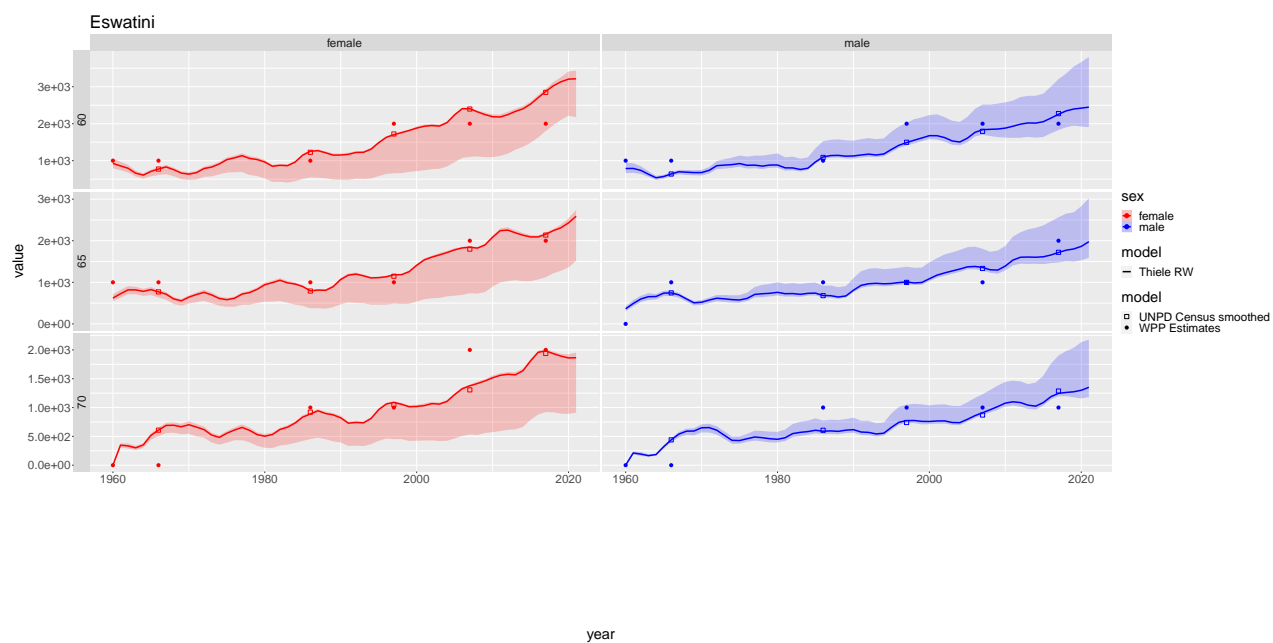


Figure 13: Population

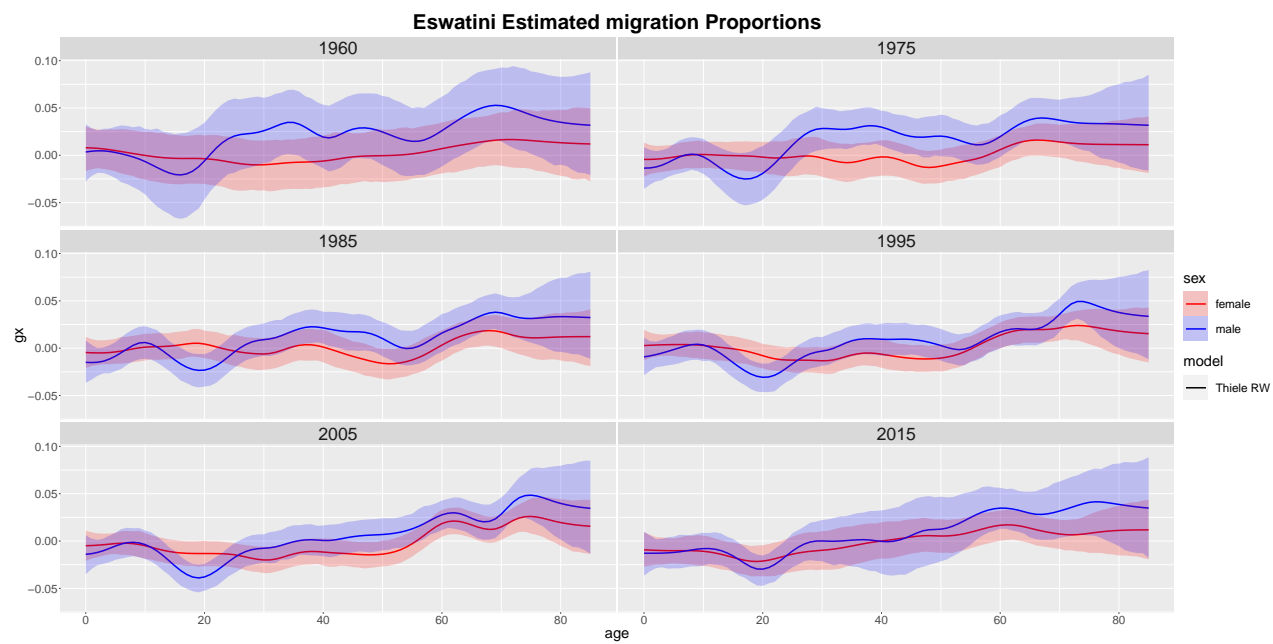


Figure 14: Migration

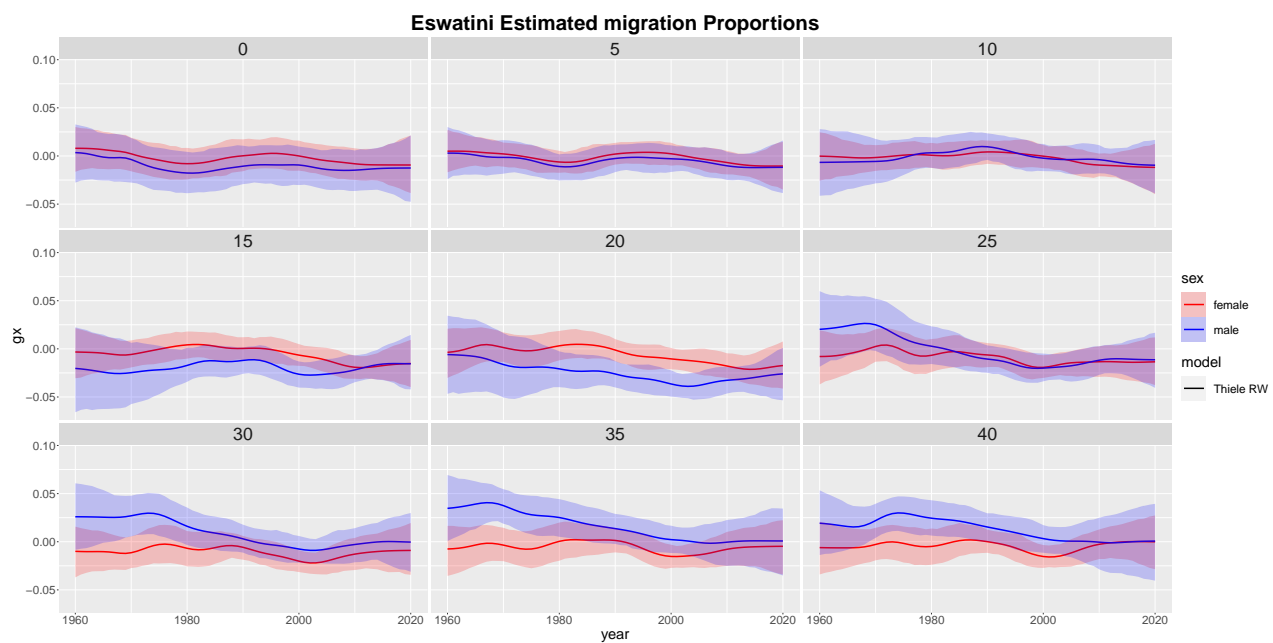


Figure 15: Migration

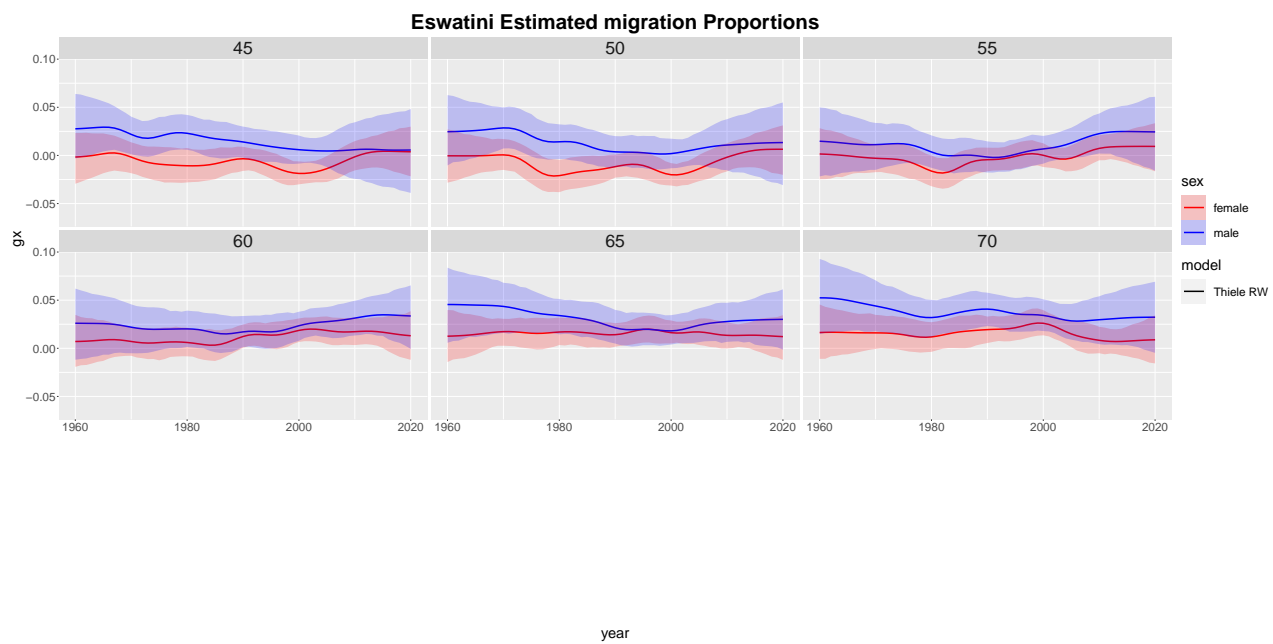


Figure 16: Migration

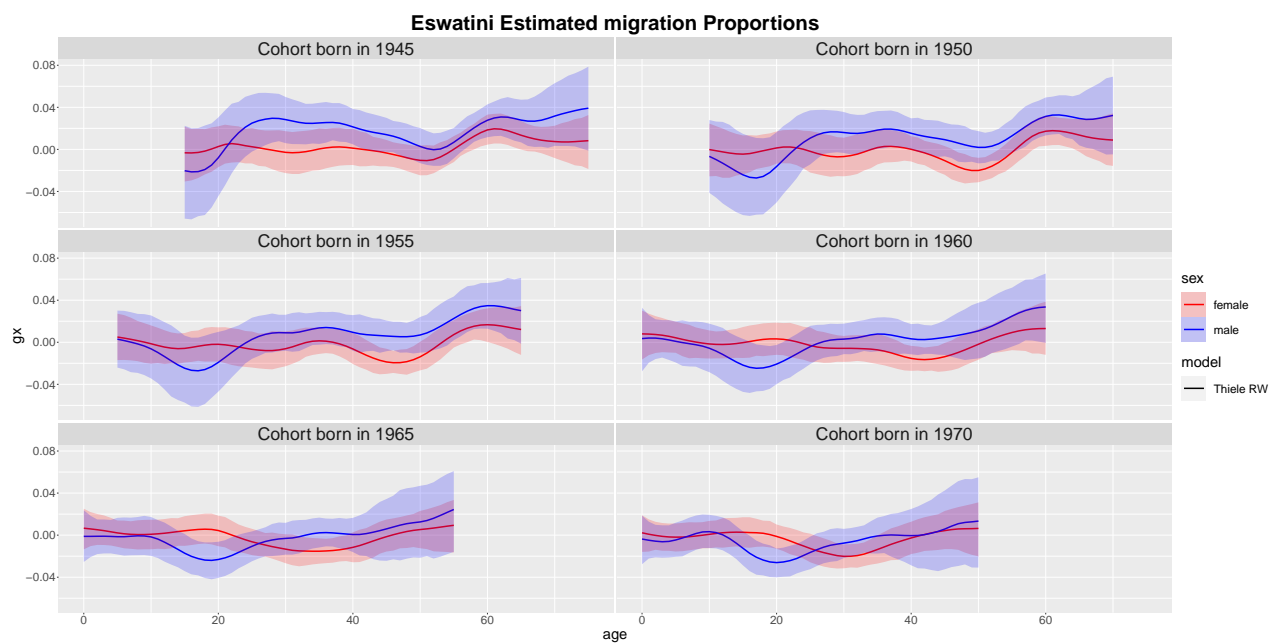


Figure 17: Migration

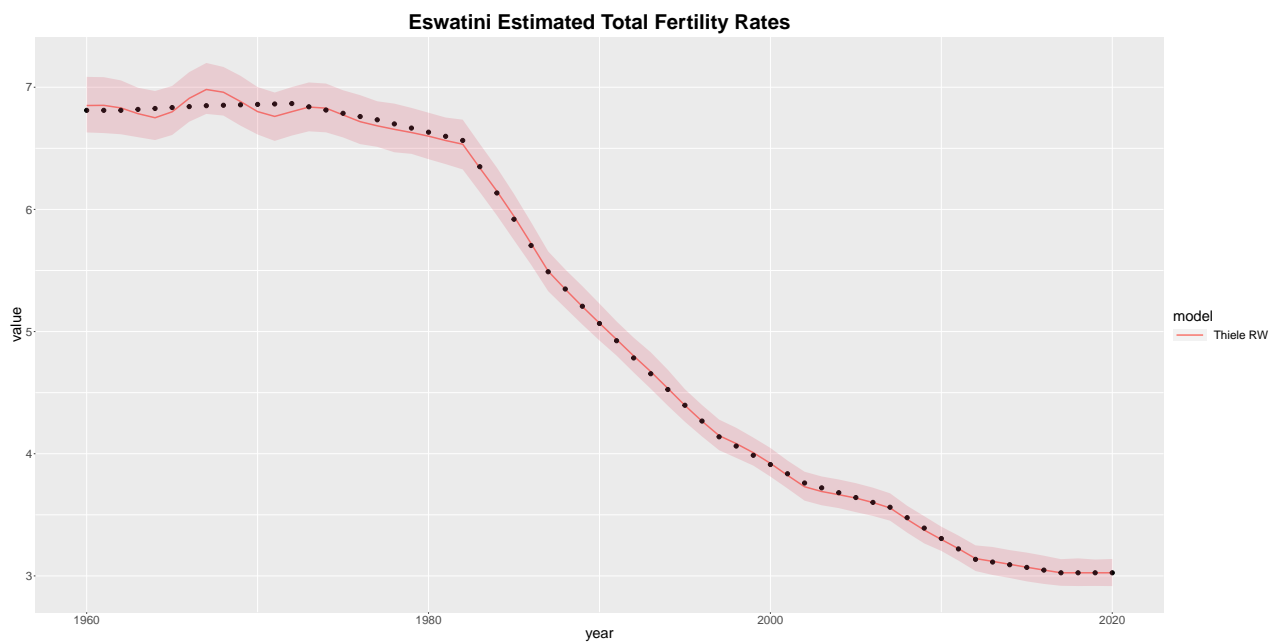


Figure 18: Total Fertility

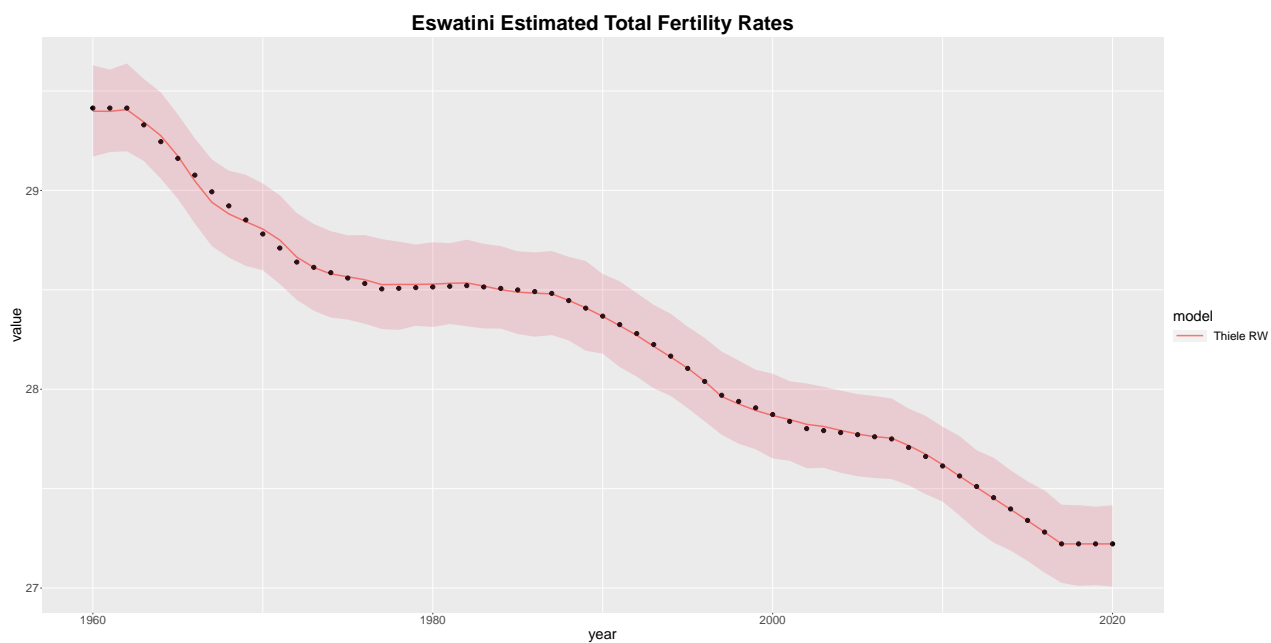


Figure 19: Mean age at births

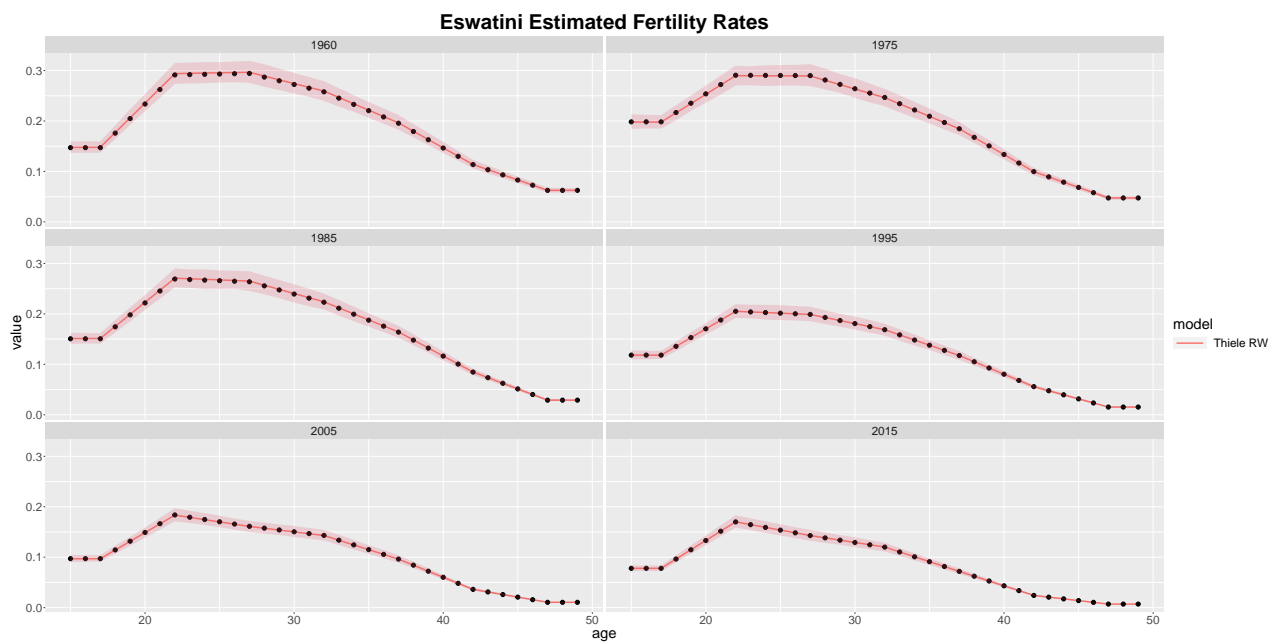


Figure 20: Fertility

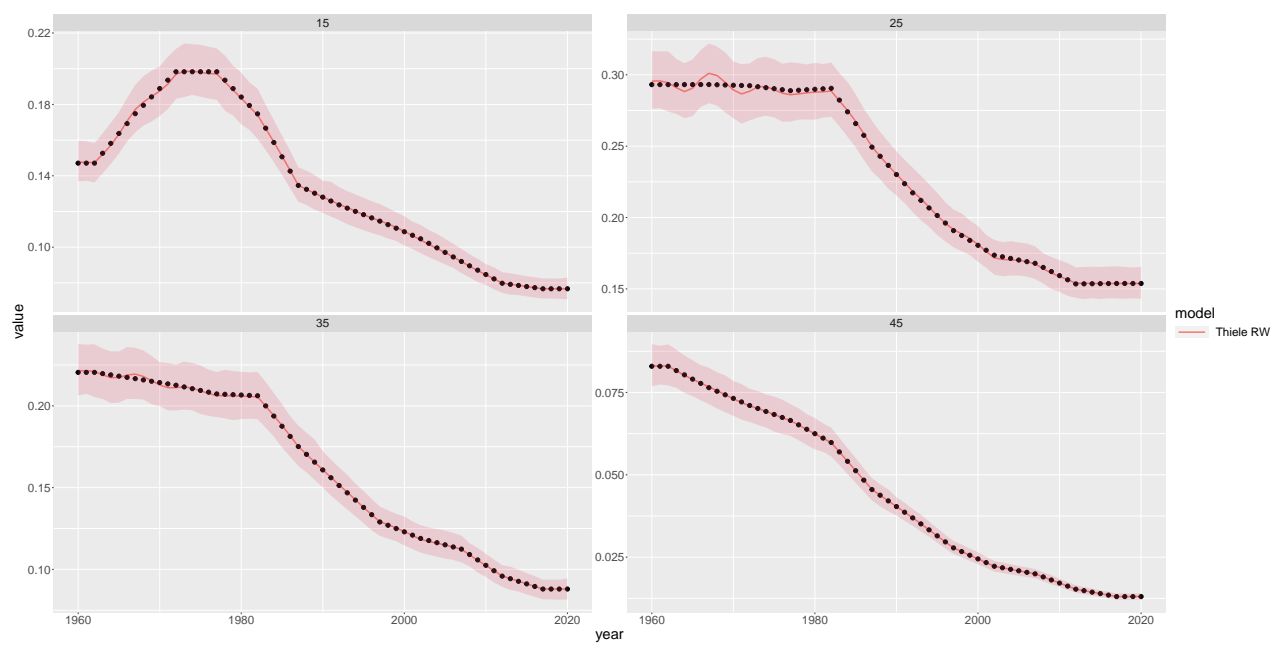


Figure 21: Fertility