

Uganda

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

## # A tibble: 86 x 5
##   age `1969` `1991` `2002` `2014`
##   <dbl>   <dbl>   <dbl>   <dbl>   <dbl>
## 1     0 139428. 340153. 502401 586516
## 2     1 186993. 308159. 447336. 574071.
## 3     2 191510. 314681. 450246. 591449
## 4     3 184954. 306938. 443253. 592649.
## 5     4 181866. 298637. 441935. 590639.
## 6     5 171741. 289064. 430734. 578980.
## 7     6 160554. 273462. 417834. 563422.
## 8     7 149220. 258883. 404547. 548996.
## 9     8 137717. 245903. 389734. 534496.
## 10    9 127022. 233325. 375940. 513891.
## # ... with 76 more rows

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

## # A tibble: 18 x 1
##   age
##   <dbl>
## 1     0
## 2     5
## 3    10
## 4    15
## 5    20
## 6    25
## 7    30
## 8    35
## 9    40
## 10   45
## 11   50
## 12   55
## 13   60
## 14   65
## 15   70
## 16   75
## 17   80
## 18   85

## [1] "Census Males"

## # A tibble: 86 x 5
##   age `1969` `1991` `2002` `2014`
##   <dbl>   <dbl>   <dbl>   <dbl>   <dbl>
## 1     0 135287. 334426. 505006 636238
## 2     1 183048. 306161. 449339. 621512.
## 3     2 187557. 310898. 450300. 634773.
## 4     3 182062. 303750. 442612. 633398.
## 5     4 179610. 295341. 441206. 627695.
## 6     5 169936. 285010. 430266. 612267.
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## 7      6 159365. 269372. 417144. 591845.
## 8      7 149658. 256683. 402868. 571051.
## 9      8 139504. 245108. 388078. 553863.
## 10     9 130558. 233840. 374840. 530259.
## # ... with 76 more rows
```

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

```
## # A tibble: 18 x 1
```

```
##   age
```

```
##   <dbl>
```

```
## 1     0
```

```
## 2     5
```

```
## 3    10
```

```
## 4    15
```

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## 5    20
```

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## 6    25
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## 7    30
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## 9    40
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## 10   45
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## 13   60
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## 14   65
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## 15   70
```

```
## 16   75
```

```
## 17   80
```

```
## 18   85
```

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
##	5.5903708	4.4668610	6.0887717	4.4668610
##	log_tau2_gx_m	log_lambda_gx_age_f	log_lambda_gx_age_m	log_lambda_gx_age_m
##	3.0982305	5.3901790	6.8037311	6.8037311
##	log_lambda_gx_agemtime_m	log_lambda_tp	log_lambda_tp_0_inflated_sd	log_lambda_tp_0_inflated_sd
##	6.9077316	2.4985765	-1.7037216	0.0000000
##	log_marginal_prec_psi_f	log_marginal_prec_A_f	log_marginal_prec_B_f	log_marginal_prec_B_f
##	6.8073946	6.8055057	6.8093025	6.8093025
##	log_marginal_prec_B_m	log_lambda_phi_f	log_lambda_psi_f	log_lambda_psi_f
##	6.6011081	4.3083621	4.3076084	2.4985765
##	log_lambda_A_f	log_lambda_B_f	log_lambda_phi_m	log_lambda_phi_m
##	4.3071760	4.3047915	4.3098731	4.3098731
##	log_lambda_epsilon_m	log_lambda_A_m	log_lambda_B_m	logit_lambda_slope_rho_m
##	4.6443985	4.3008694	4.2547174	-0.0000000
##	logit_lambda_slope_rho_m	logit_delta_slope_rho_m	logit_epsilon_slope_rho_m	
##	-1.1059382	2.6793080	2.1774470	

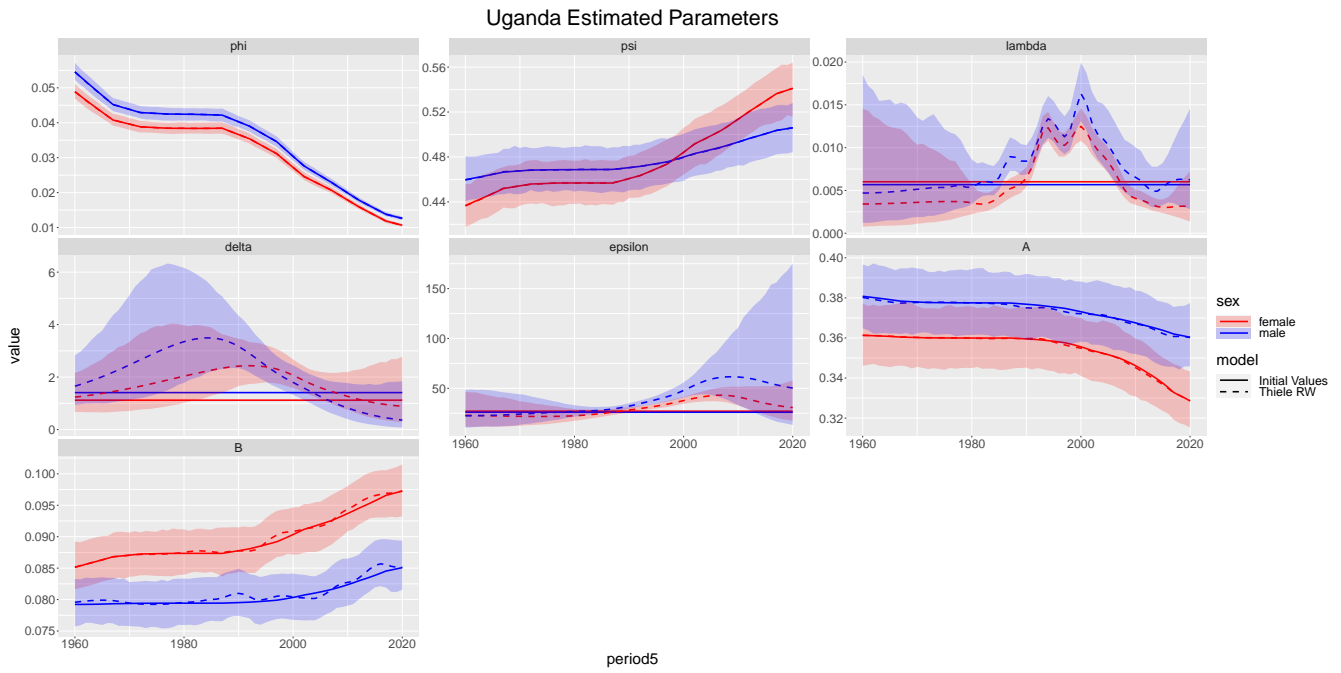


Figure 1: Estimated parameters

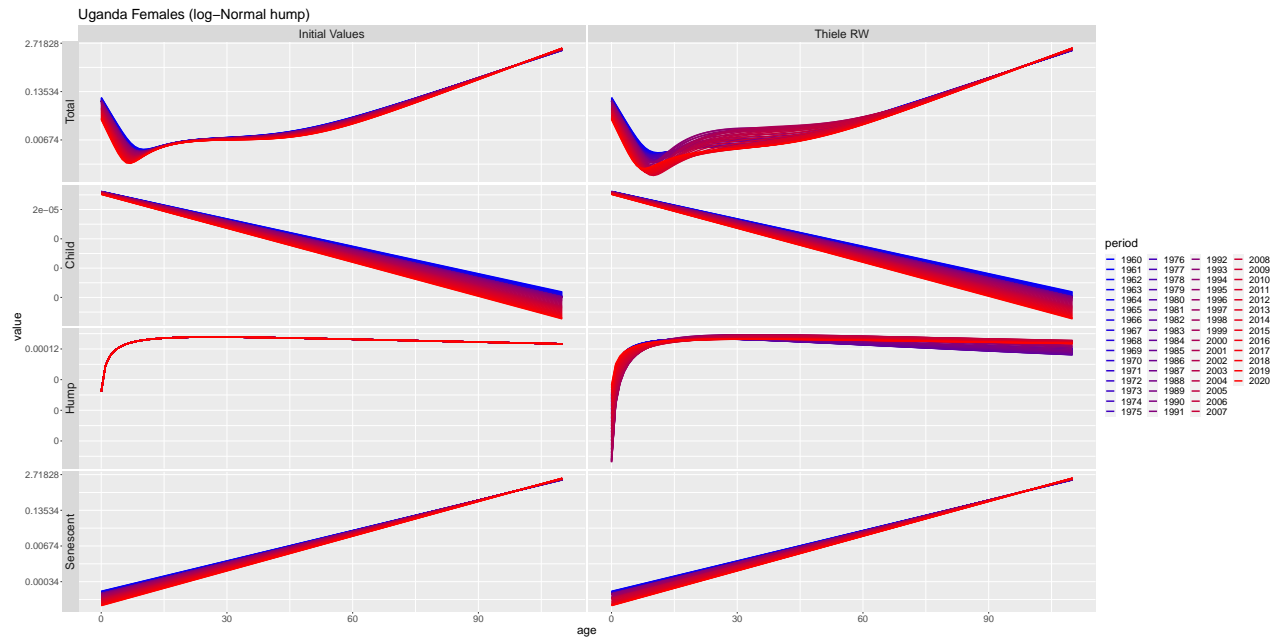


Figure 2: Thiele Decomposed

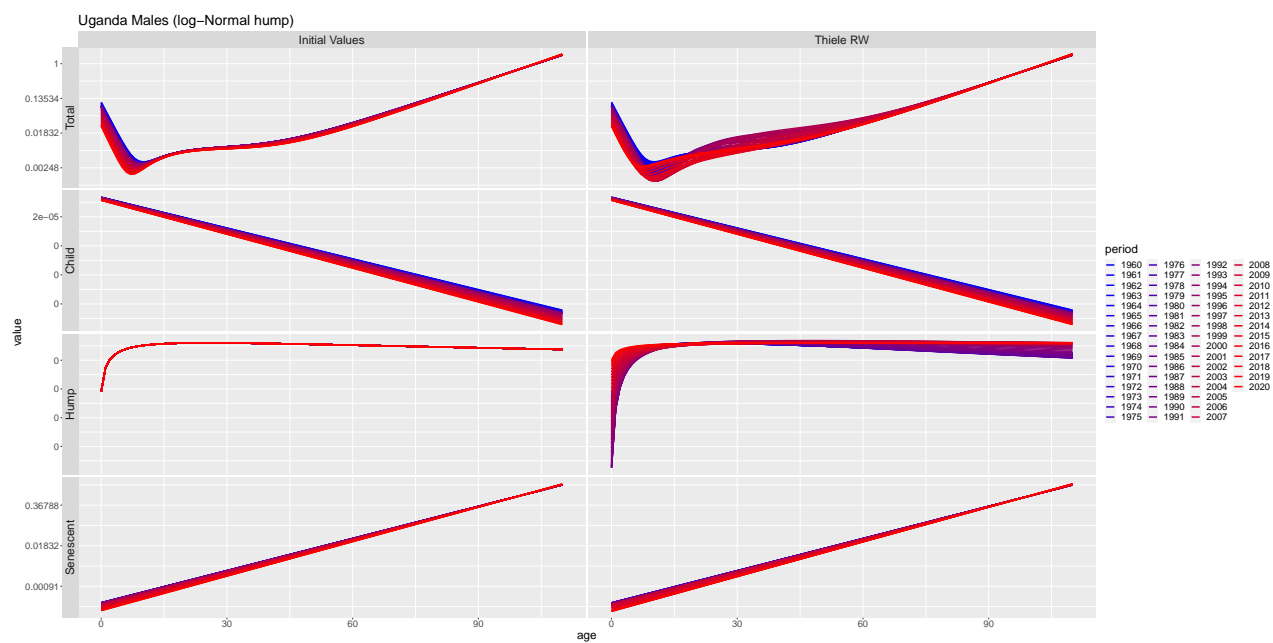


Figure 3: Thiele Decomposed

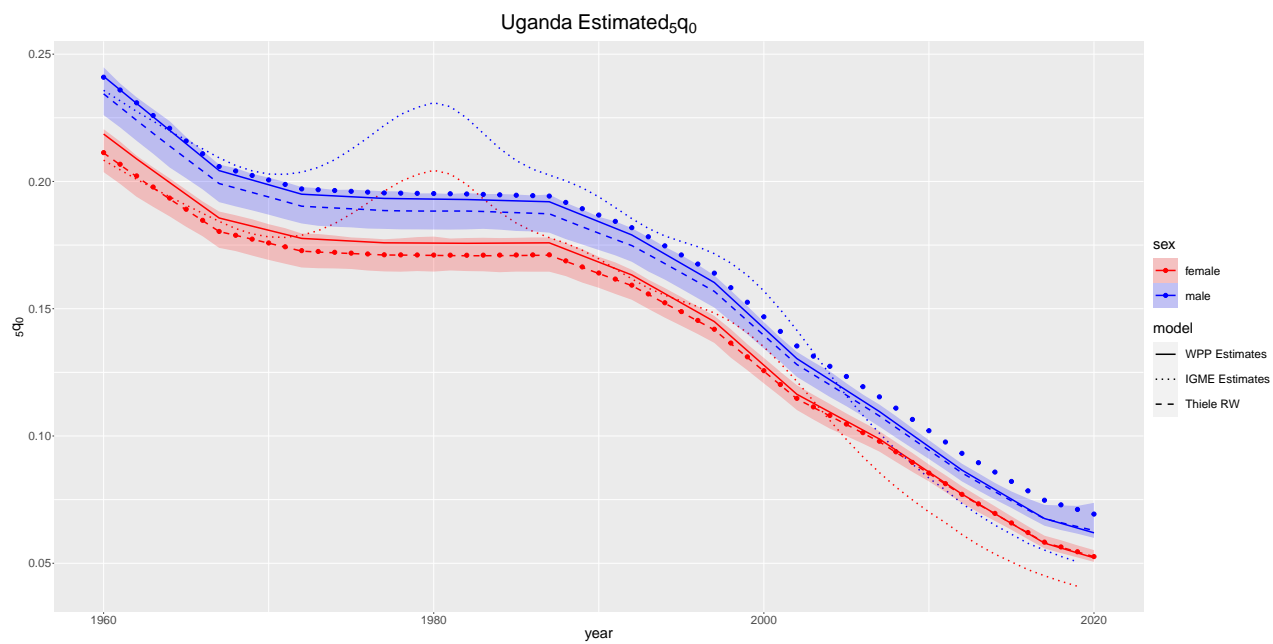


Figure 4: Estimated $5q_0$

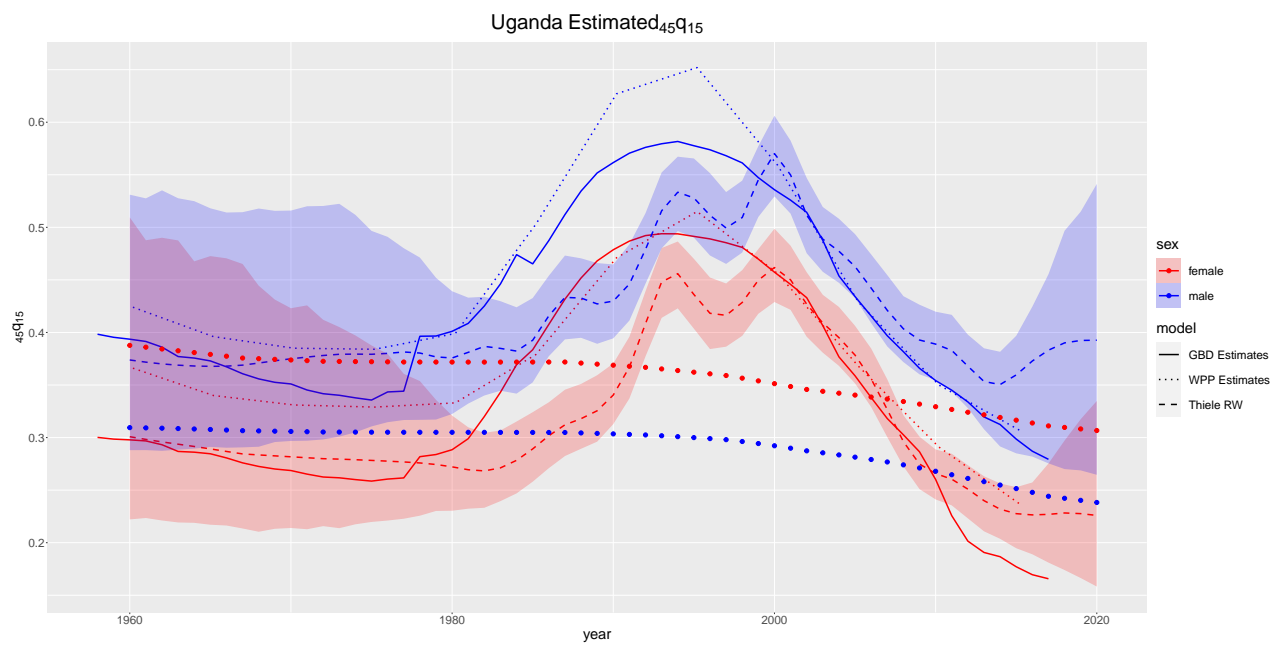


Figure 5: Estimated $_{45}q_{15}$

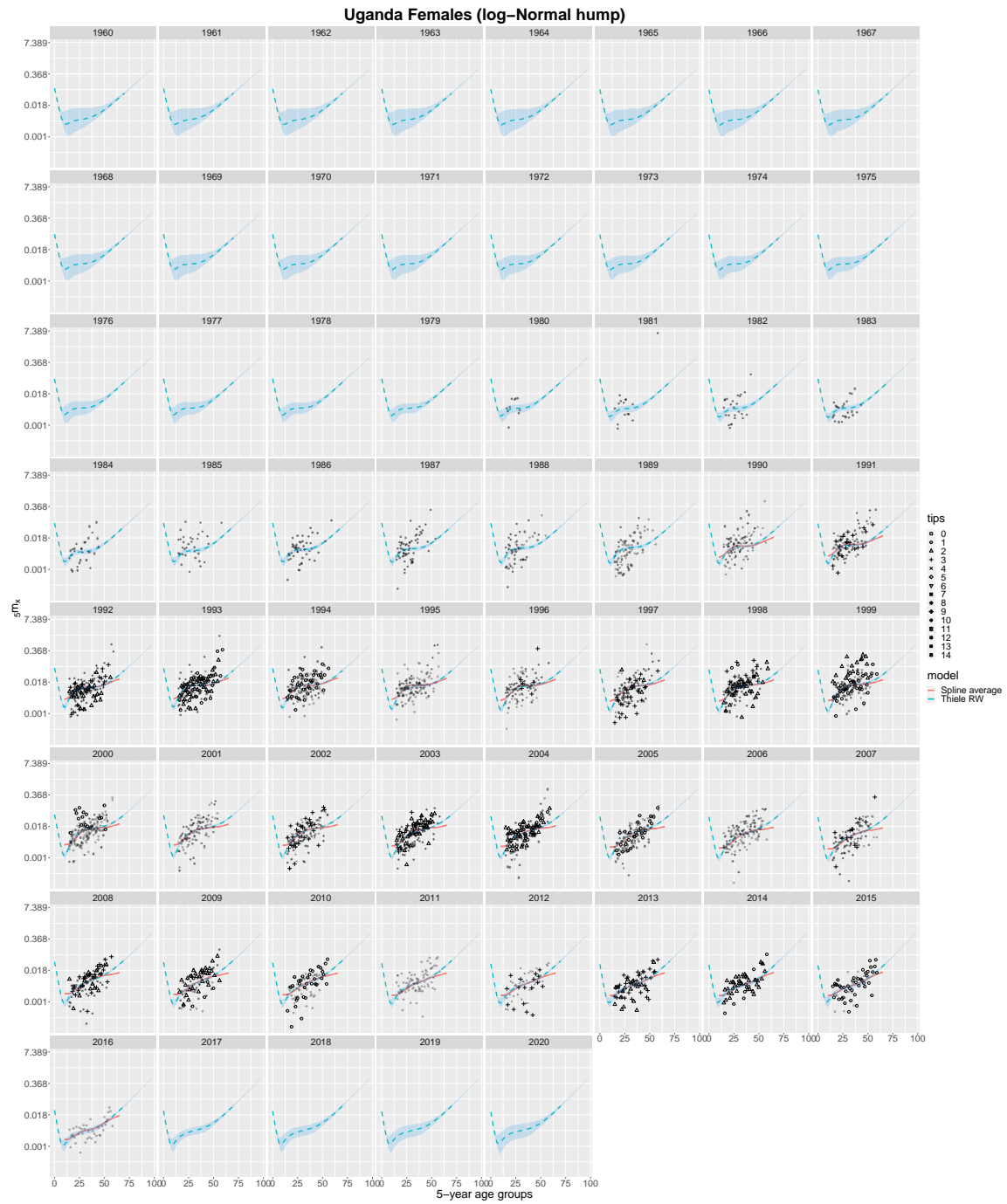


Figure 6: Mortality Schedules

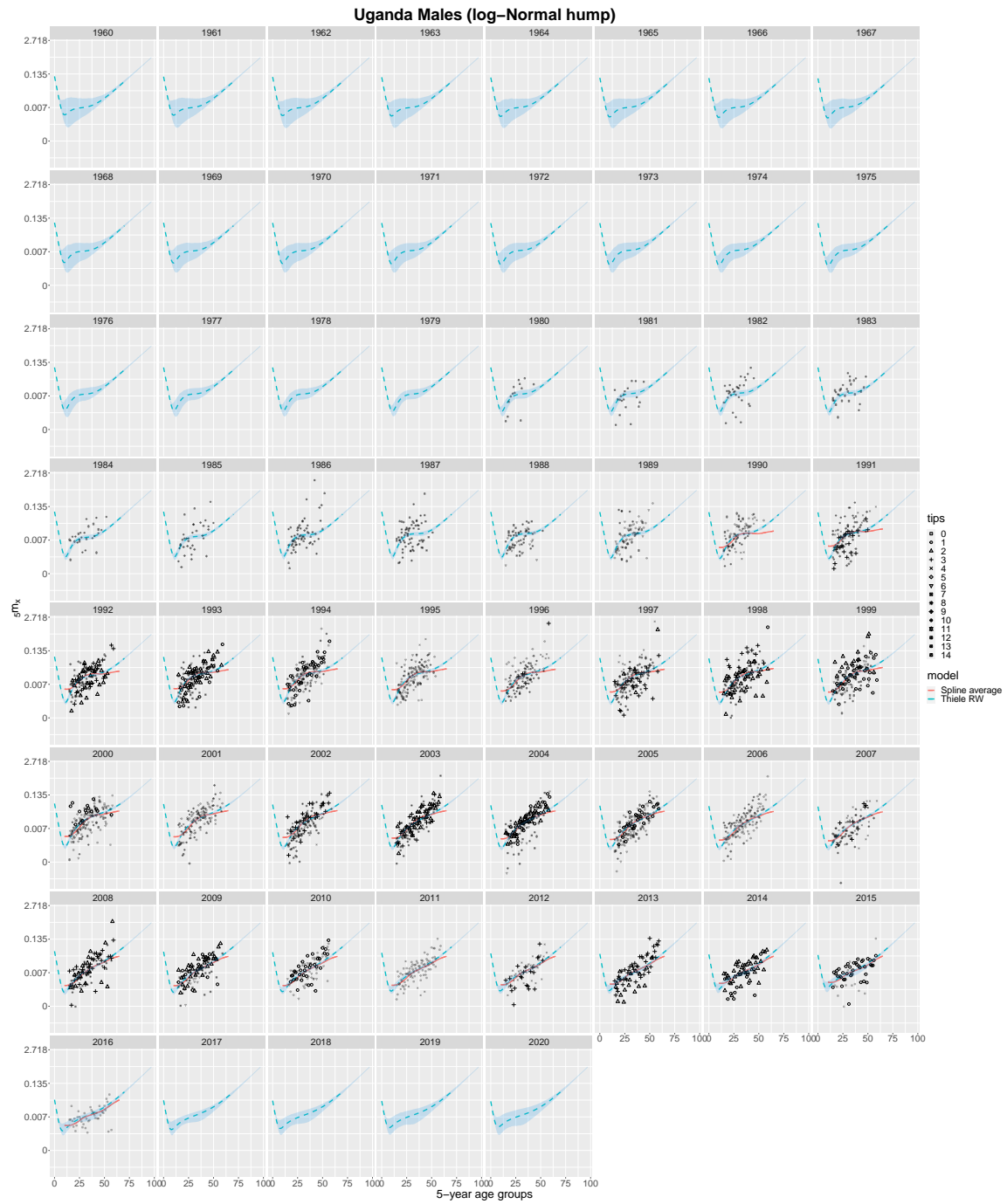


Figure 7: Mortality Schedules

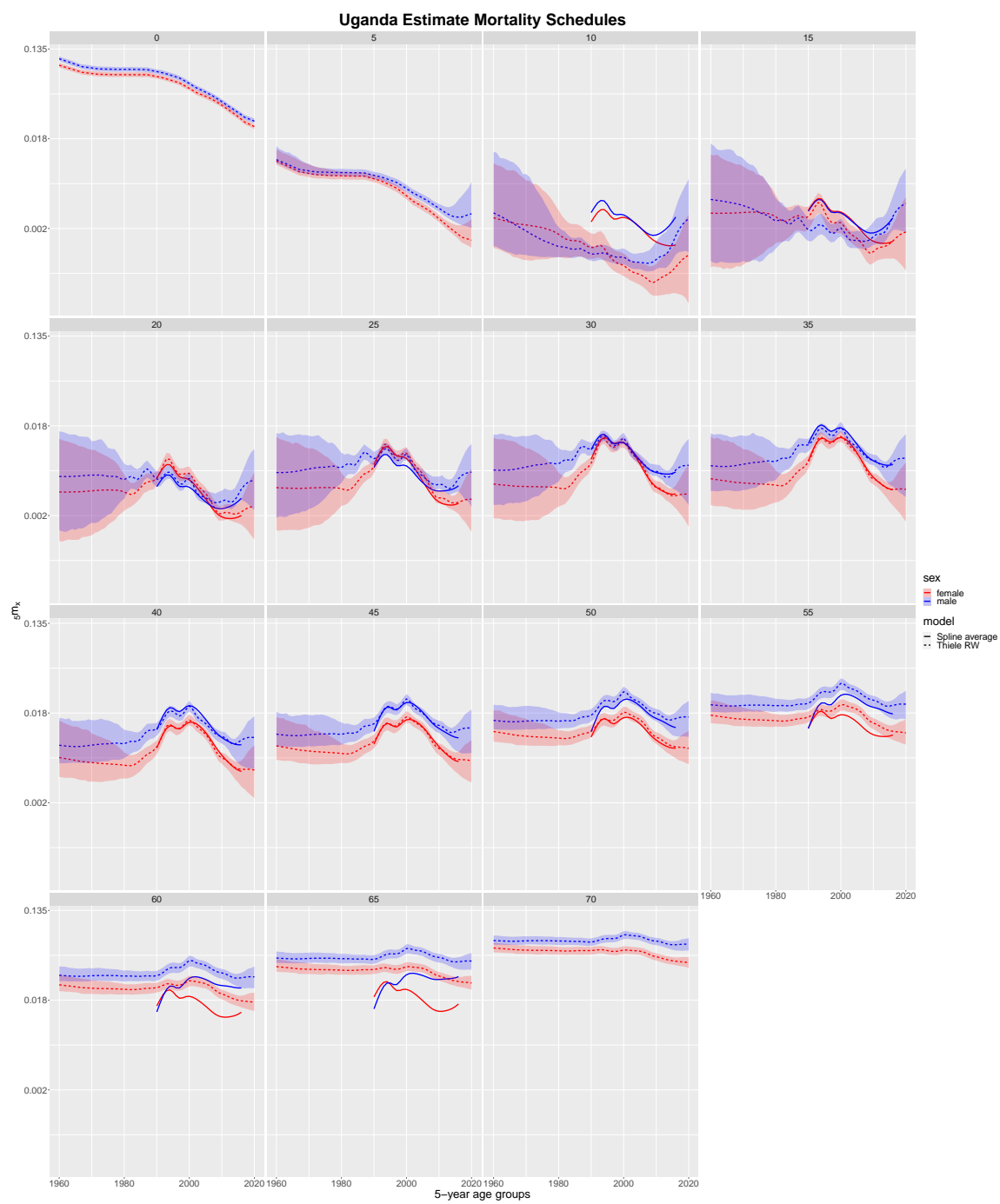


Figure 8: Mortality Schedules

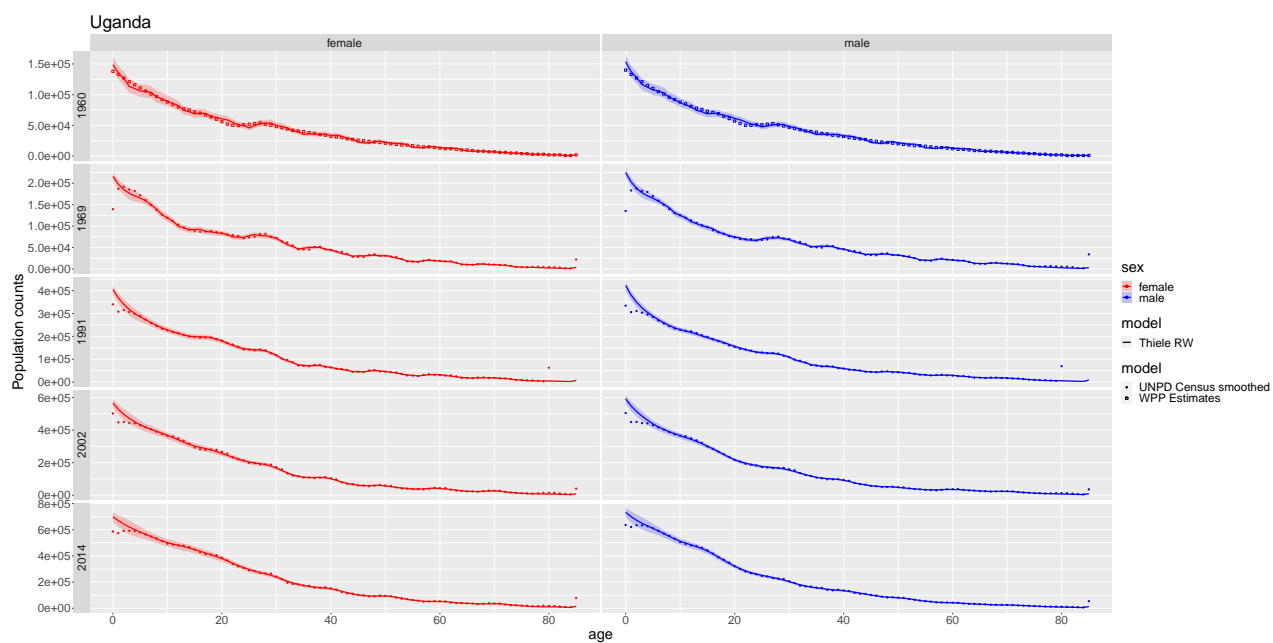


Figure 9: Population

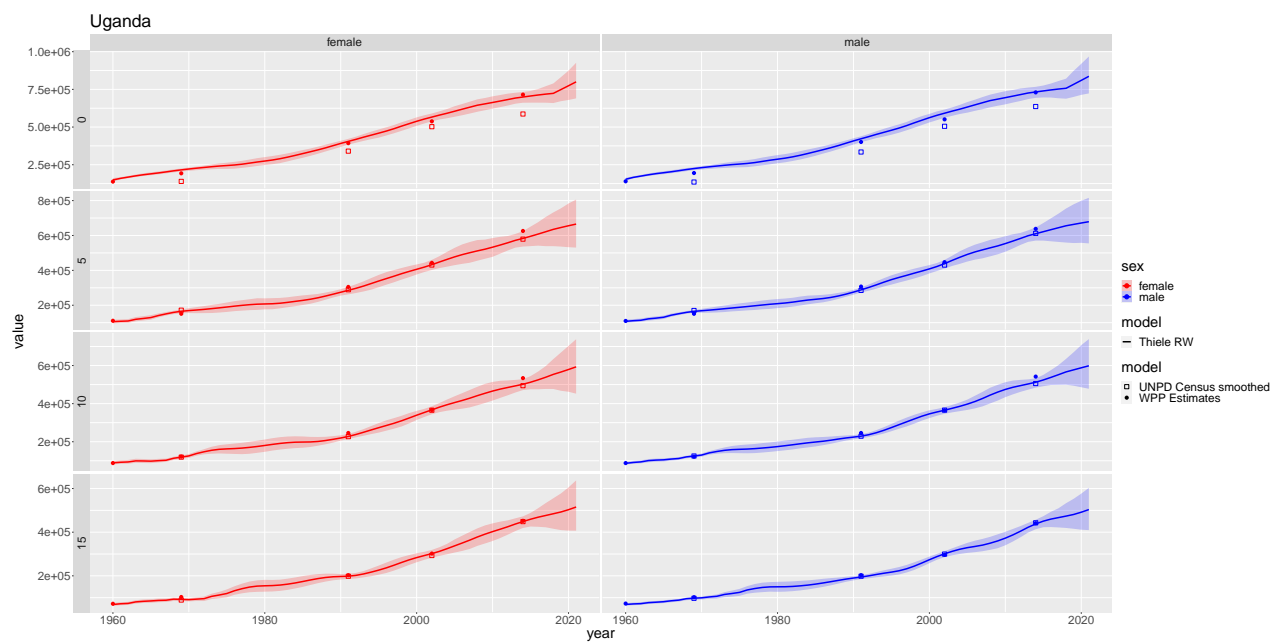


Figure 10: Population

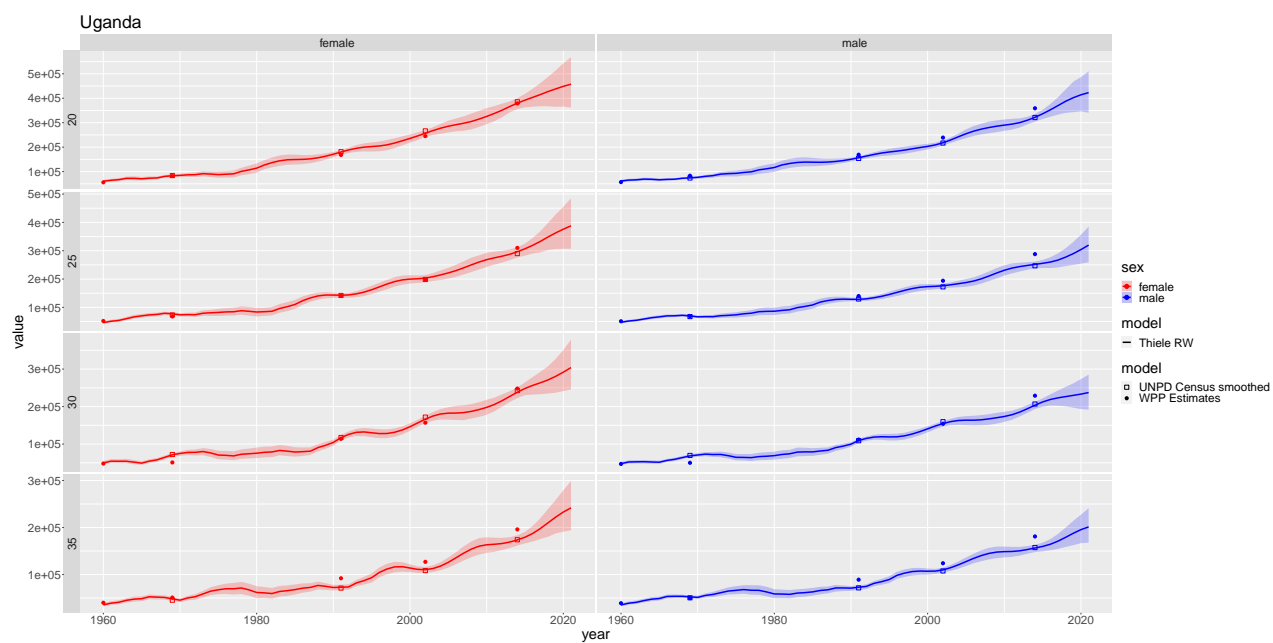


Figure 11: Population

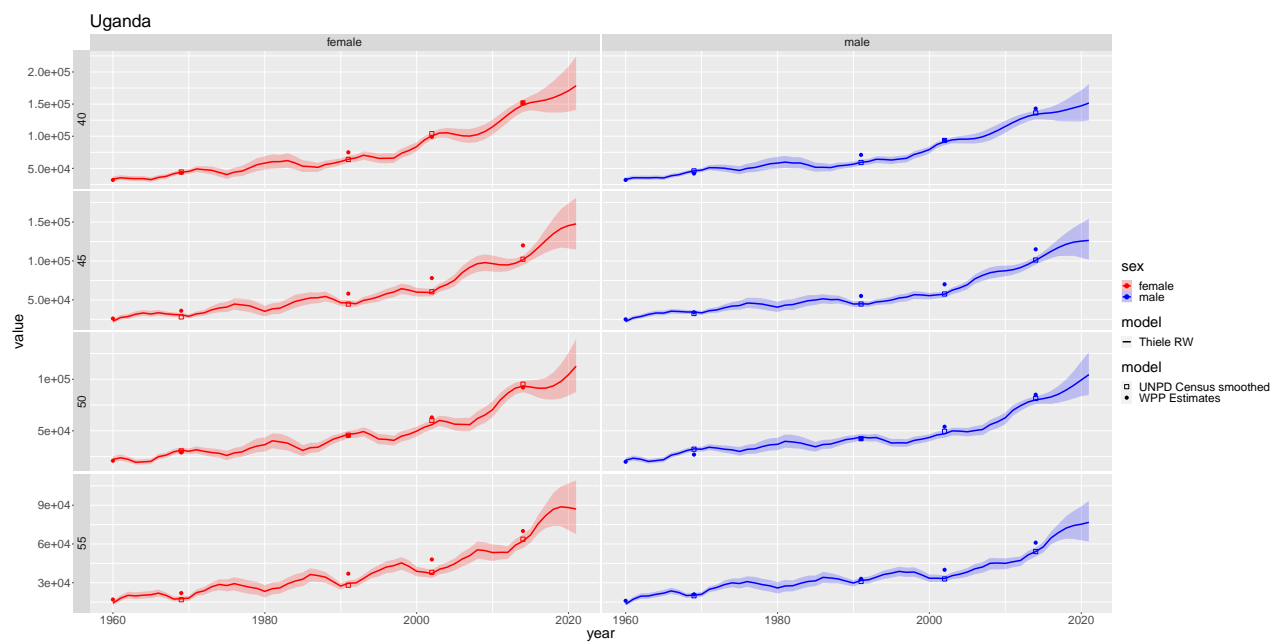


Figure 12: Population



Figure 13: Population

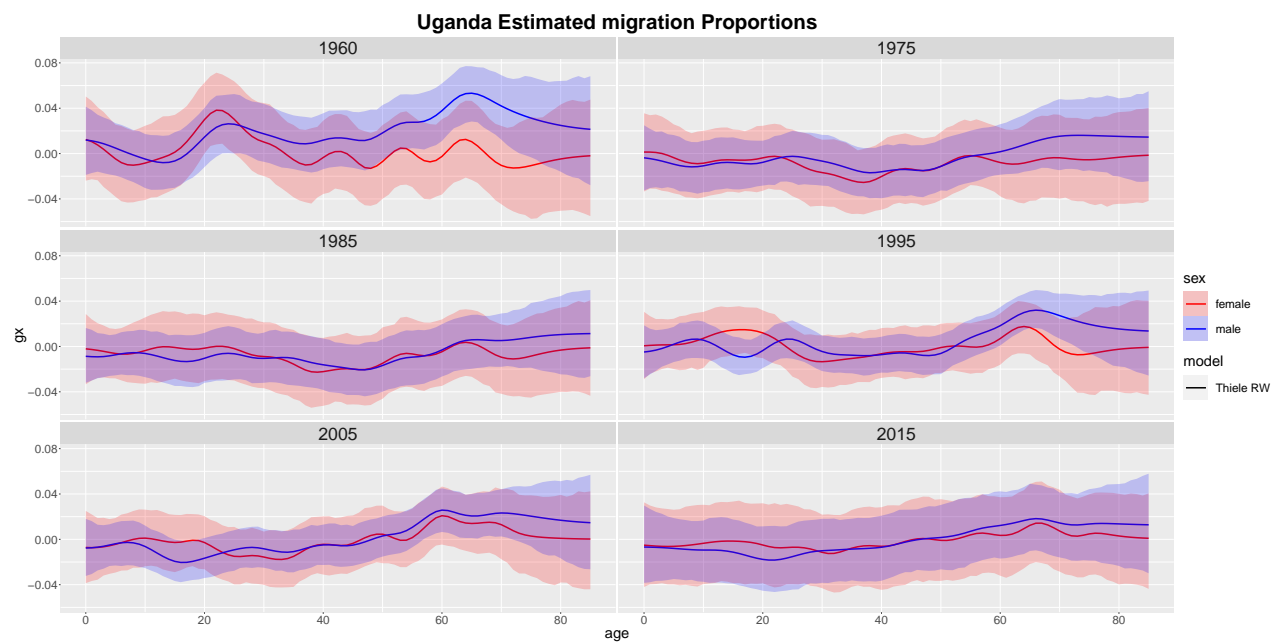


Figure 14: Migration

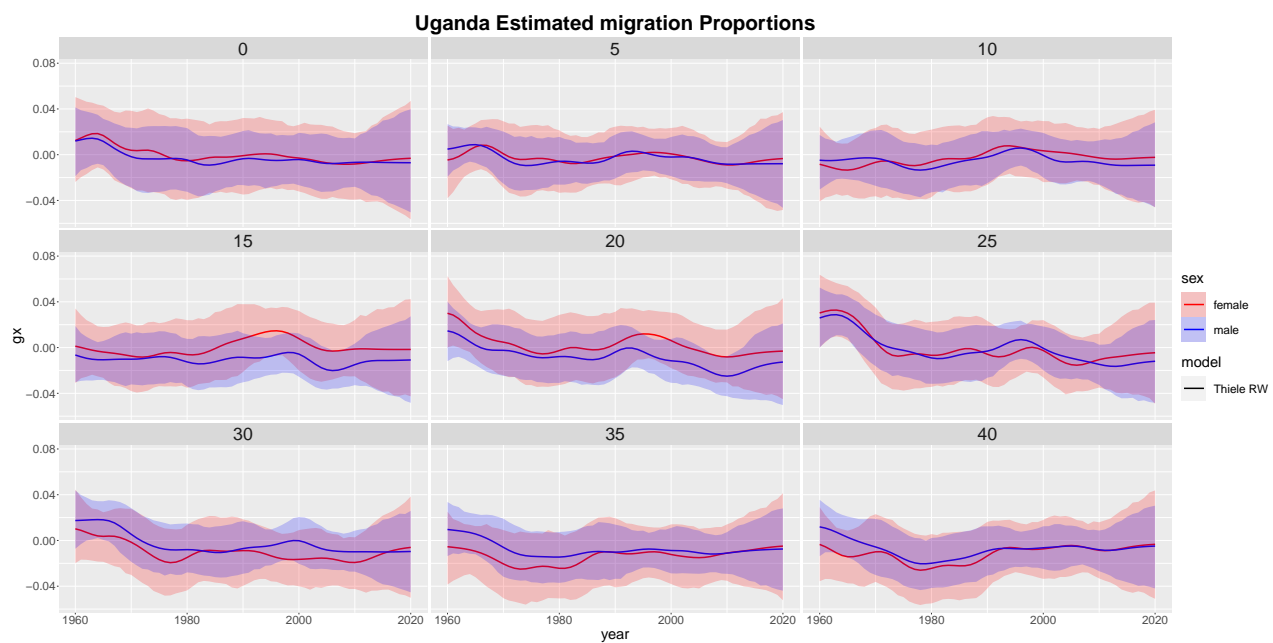


Figure 15: Migration

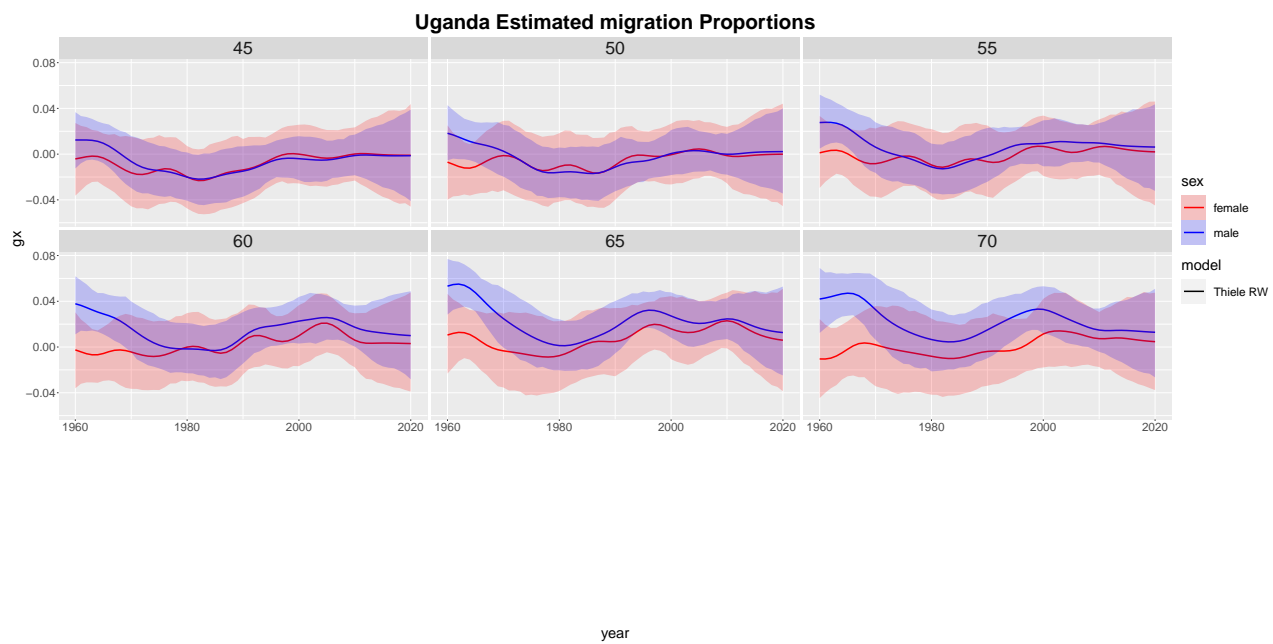


Figure 16: Migration

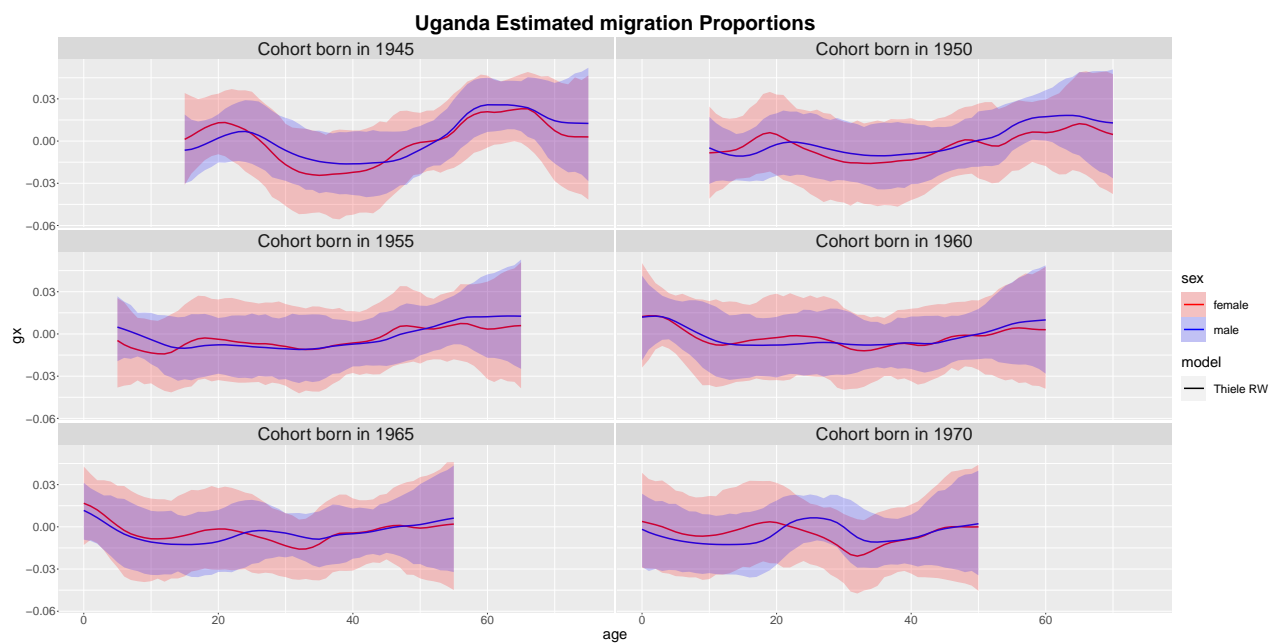


Figure 17: Migration

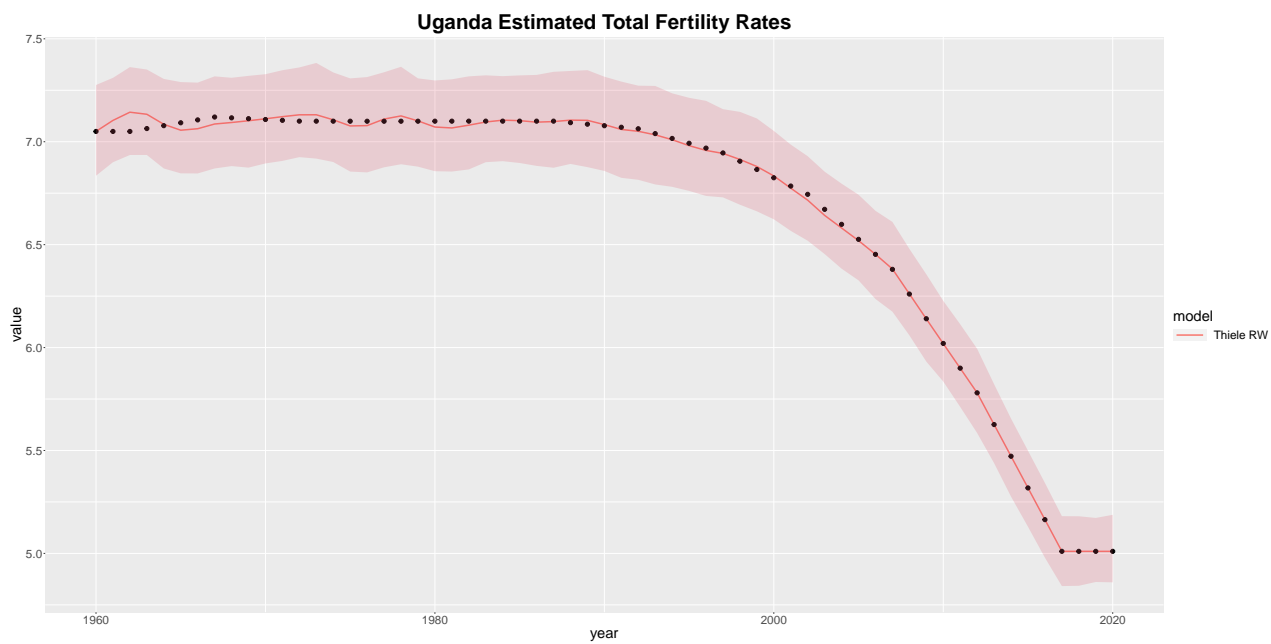


Figure 18: Total Fertility

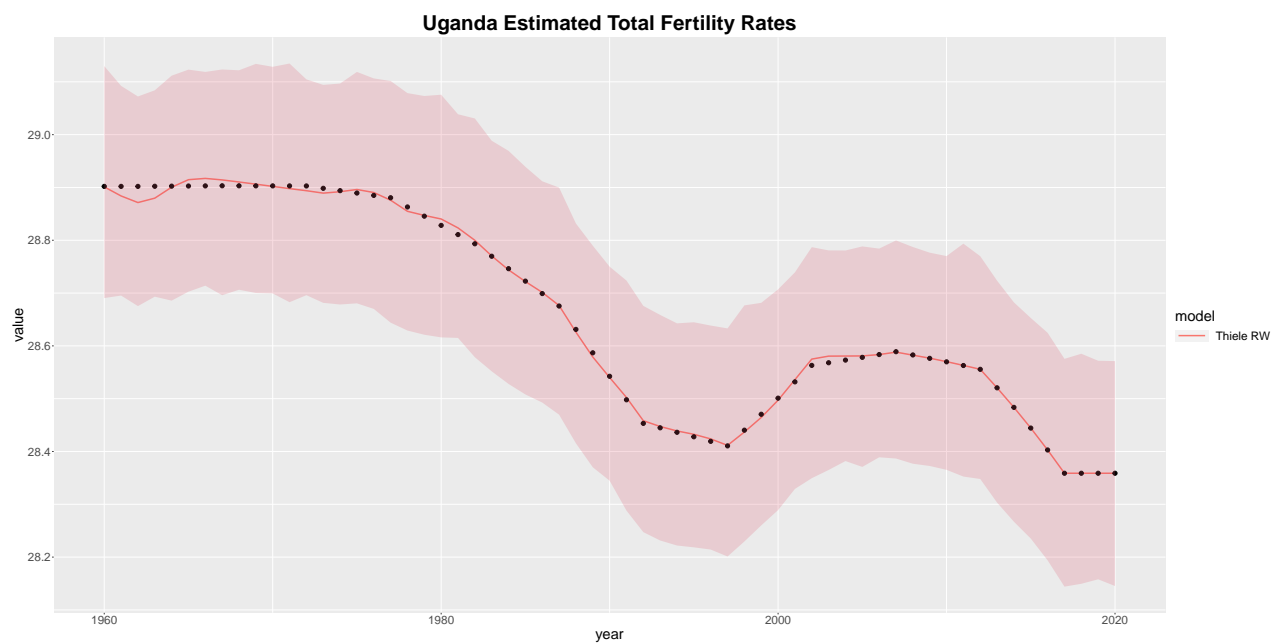


Figure 19: Mean age at births

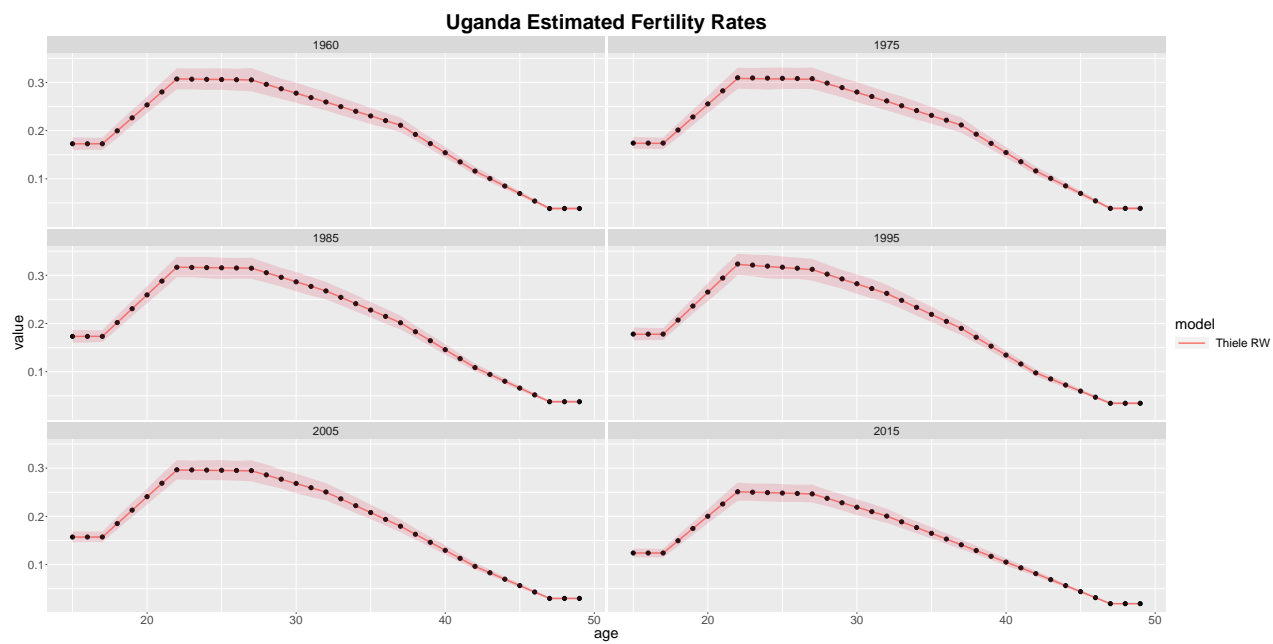


Figure 20: Fertility

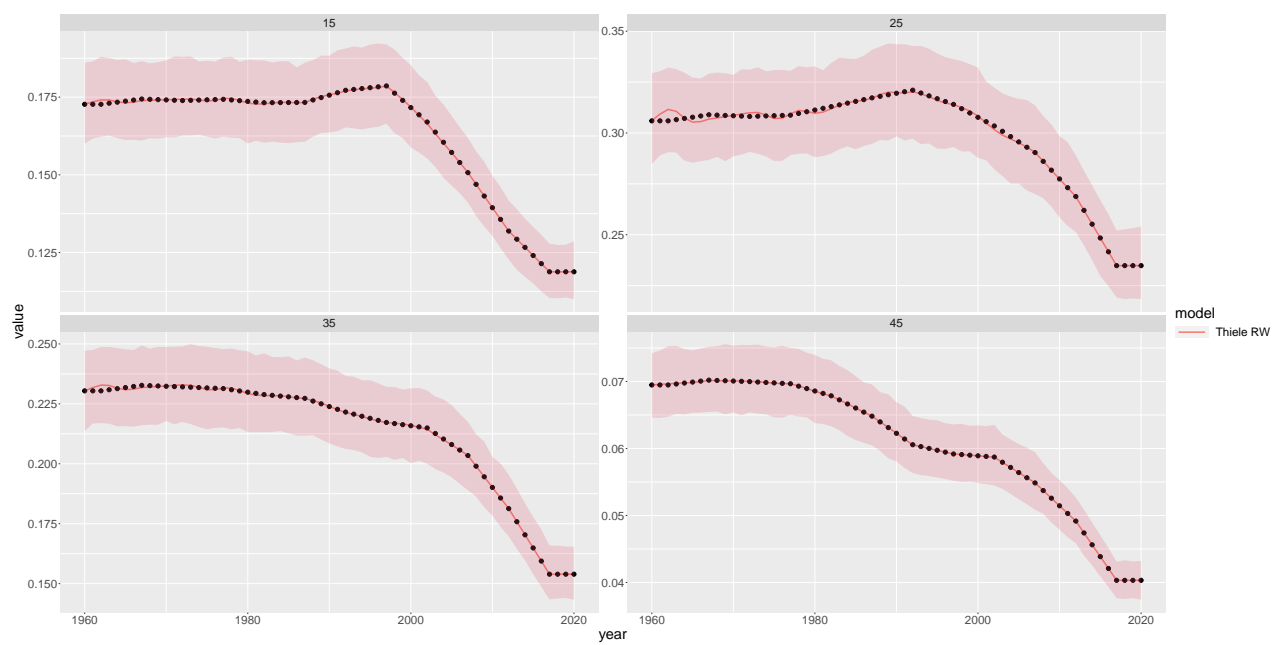


Figure 21: Fertility