

Rwanda

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

```
## # A tibble: 18 x 5
```

```
##   aggr.age `1978` `1991` `2002` `2012`
## *   <dbl>   <dbl>   <dbl>   <dbl>   <dbl>
## 1      0 466037. 653170 665141 771978
## 2      5 361325. 580142. 577688 765565
## 3     10 304639. 474522. 558736. 655970.
## 4     15 275639. 373865 494688. 588830.
## 5     20 231462. 308889. 420437 520983.
## 6     25 173641. 269890 337174. 453729
## 7     30 130320. 233112. 264493. 379522.
## 8     35 111521. 182968. 215660. 305718.
## 9     40 100240. 133279. 179419. 244142.
## 10    45  86457. 105644. 146335. 200541
## 11    50  74057.  92709. 113963. 167144.
## 12    55  62652.  79171.  86033. 136175.
## 13    60  49547.  64911.  65745. 104611
## 14    65  32385.  50270  50987.  76197.
## 15    70  13319.  40610  38045.  54853.
## 16    75  22368.  35965  21734  39347.
## 17    80      NA      NA  14707  26706.
## 18    85      NA      NA   8231  26496.
```

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

```
## # A tibble: 18 x 5
```

```
##   aggr.age `1978` `1991` `2002` `2012`
## *   <dbl>   <dbl>   <dbl>   <dbl>   <dbl>
## 1      0 462588. 644055 655090 768049
## 2      5 358634. 566505 563351 757421
## 3     10 303160. 460628. 536404. 640364.
## 4     15 273928. 358739. 463566. 569188.
## 5     20 226121. 293768. 383778. 499650.
## 6     25 161692. 261421. 299168. 428454.
## 7     30 110684. 229449. 228871. 350632.
## 8     35  87492. 177671. 185847. 274429.
## 9     40  79283. 122634. 154300. 209778
## 10    45  71068.  86745 123156. 167014.
## 11    50  61257.  71374.  91774. 136966.
## 12    55  51816.  62772.  65381. 108245.
## 13    60  42545.  52764.  47457.  79267
## 14    65  30119.  41664.  36184.  54291.
## 15    70  14043.  32755  27764.  36581.
## 16    75  23333.  33020  16255  25146.
## 17    80      NA      NA  12081  17154.
## 18    85      NA      NA   6610  17077.
```

Thiele log-Normal Hump RW

```
## Warning in fit_tmb(input.thiele.loghump.oag.vec.RW, inner_verbose = FALSE, : convergence error: false c
```

```
##      user  system elapsed
##      6.81    0.19    7.04
## [1] "false convergence (8)"
```

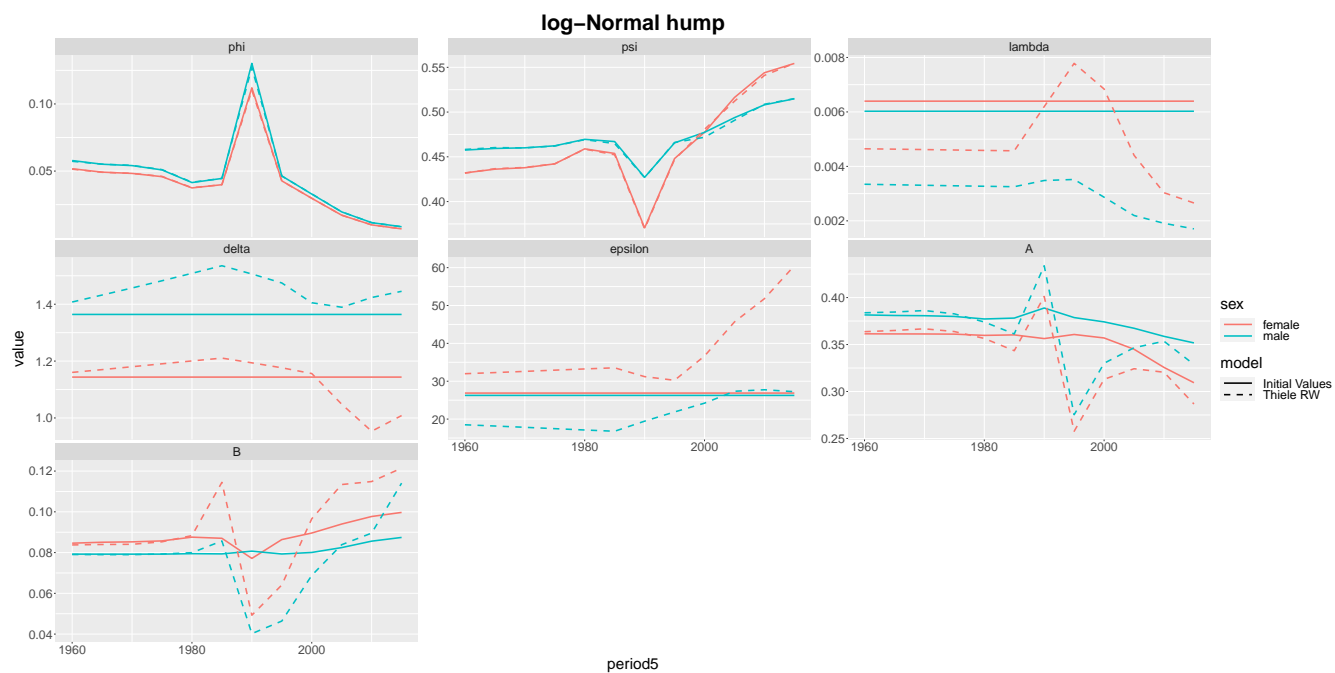


Figure 1: Estimated parameters



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



Figure 3: Estimated $_{5}q_0$

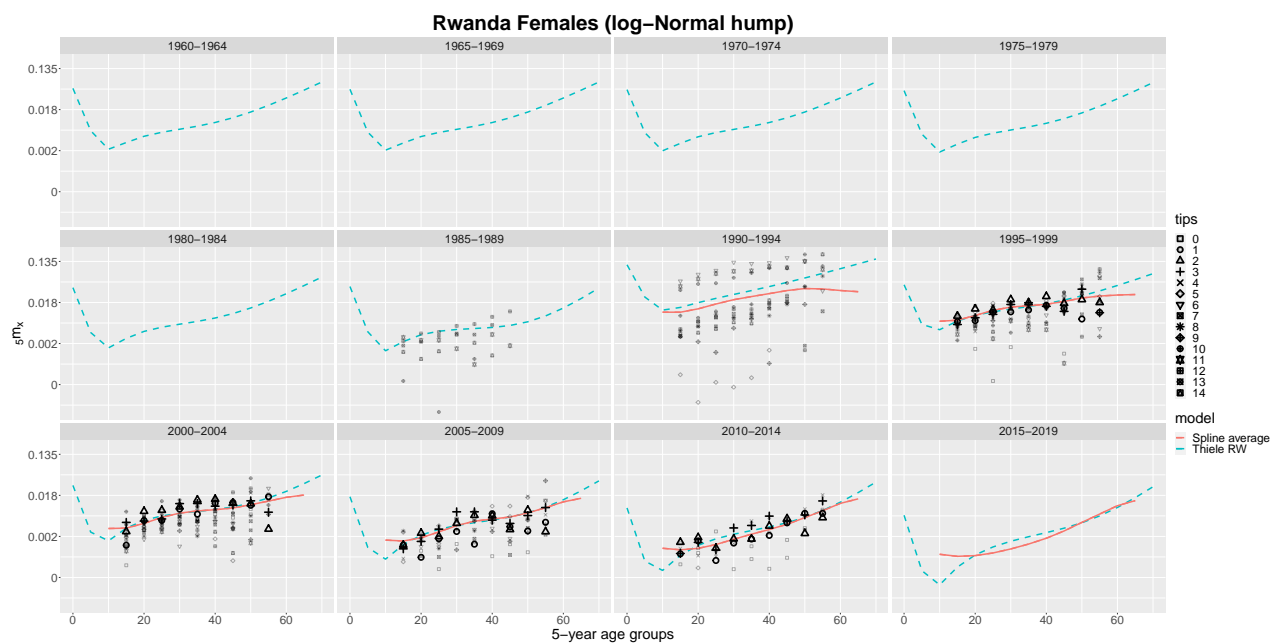


Figure 4: Mortality Schedules

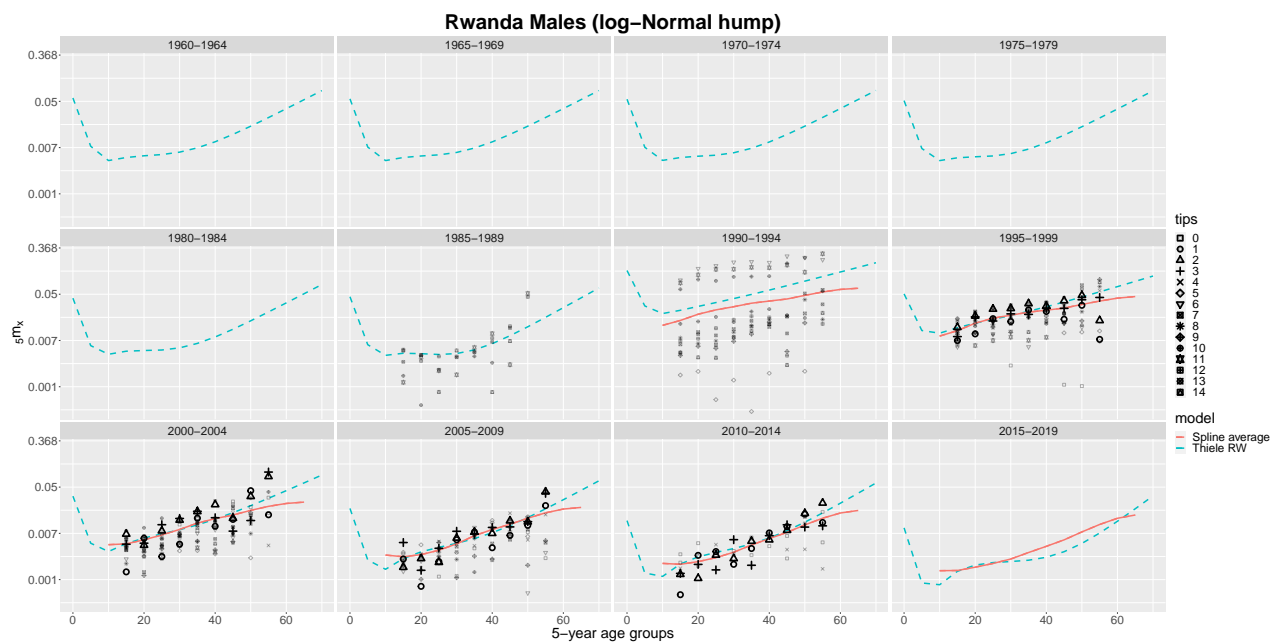


Figure 5: Mortality Schedules

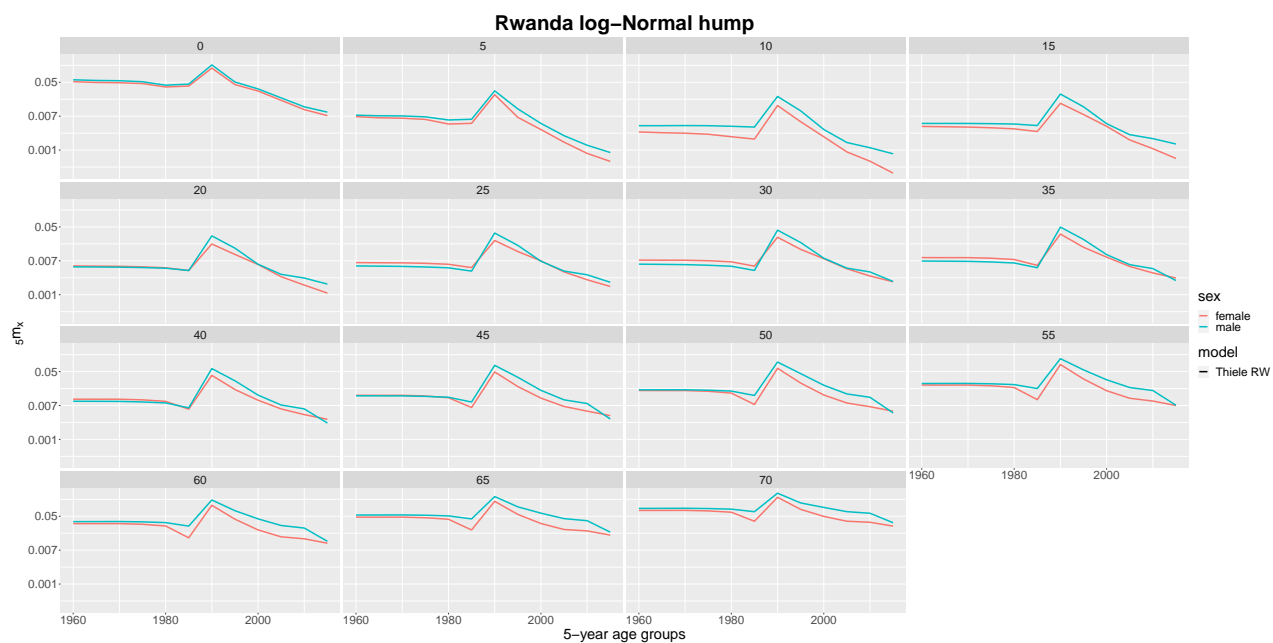


Figure 6: Mortality Schedules

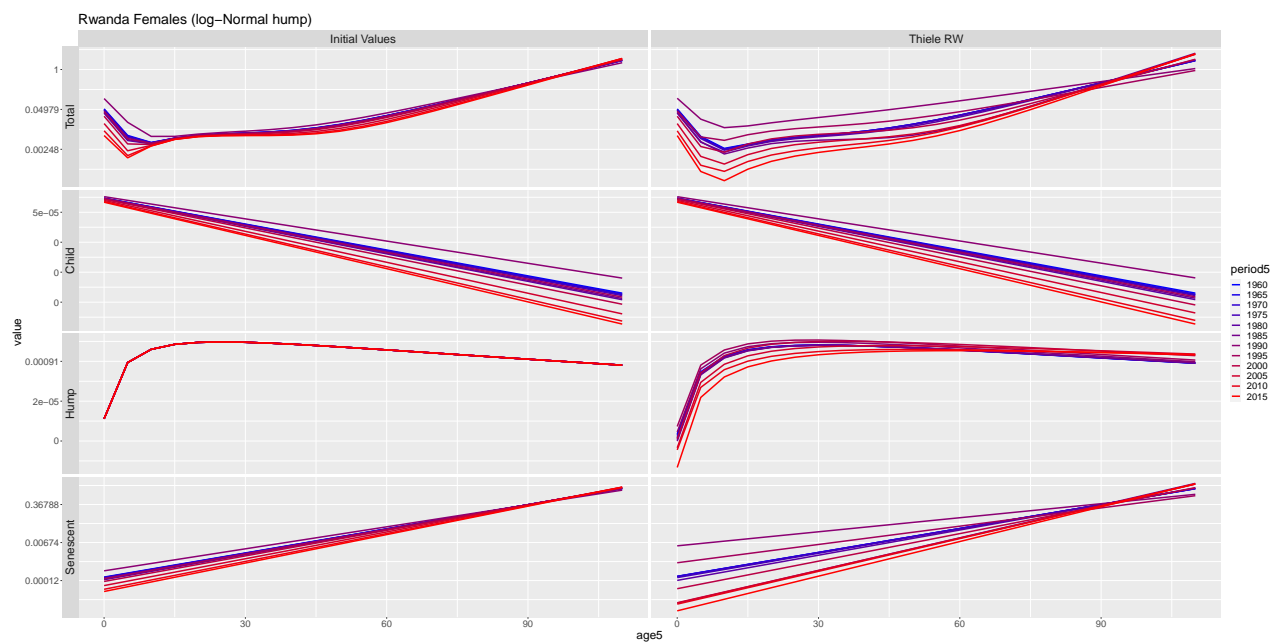


Figure 7: Thiele Decomposed

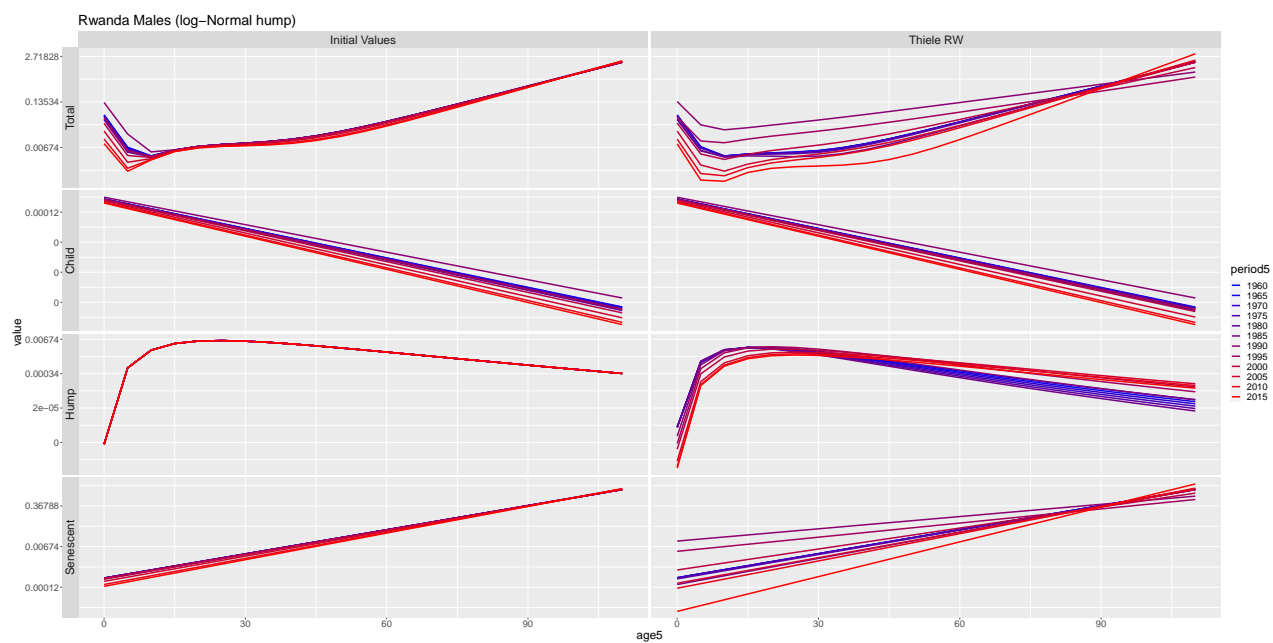


Figure 8: Thiele Decomposed

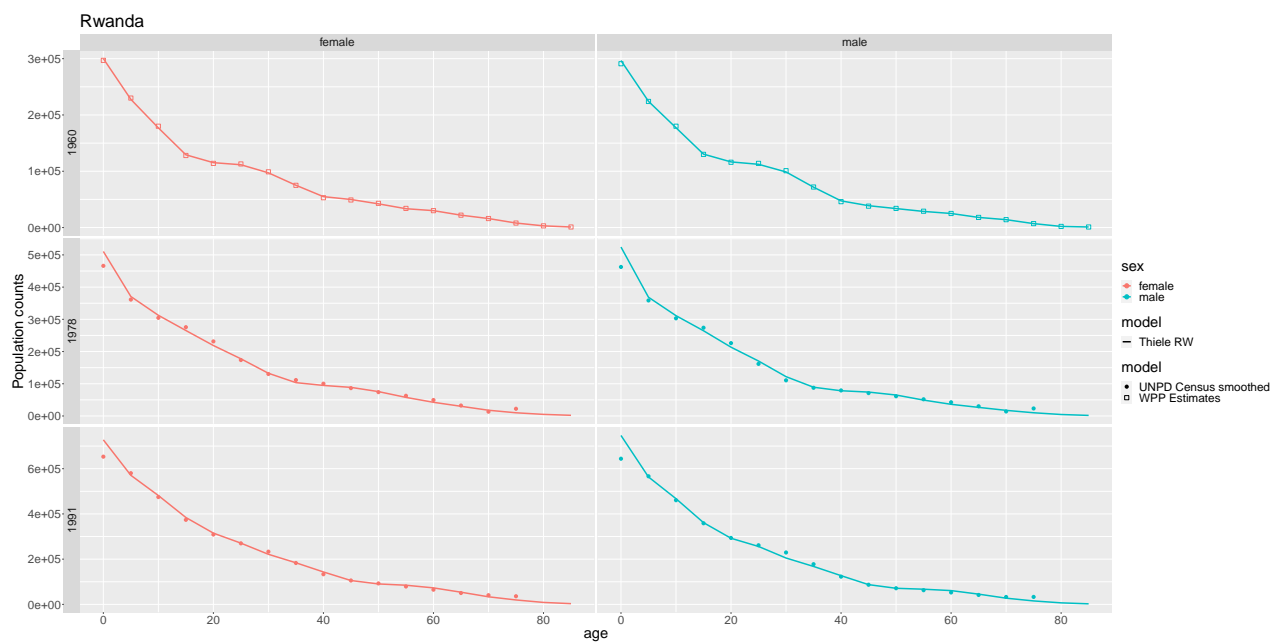


Figure 9: Population

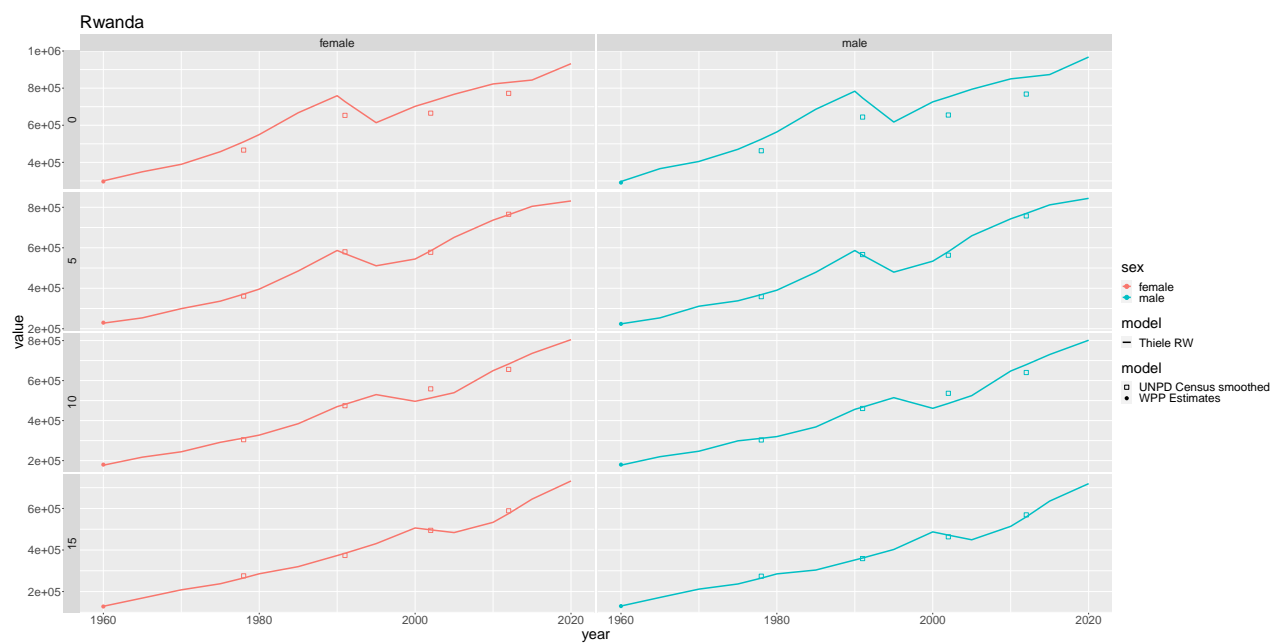


Figure 10: Population

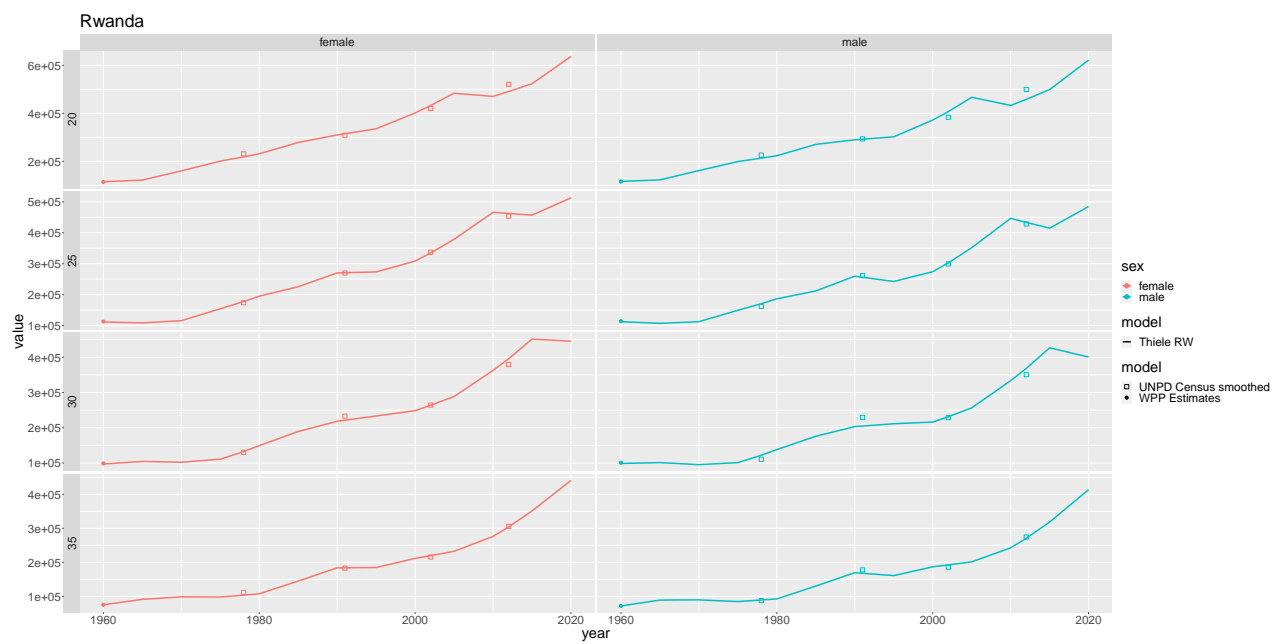


Figure 11: Population

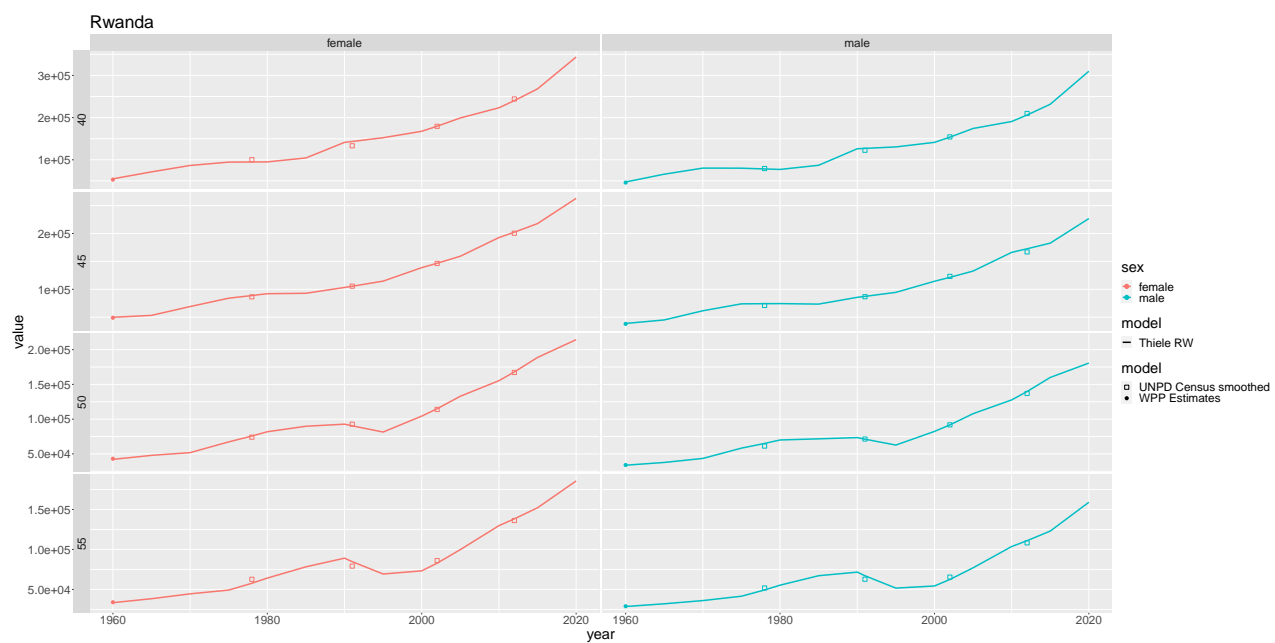


Figure 12: Population

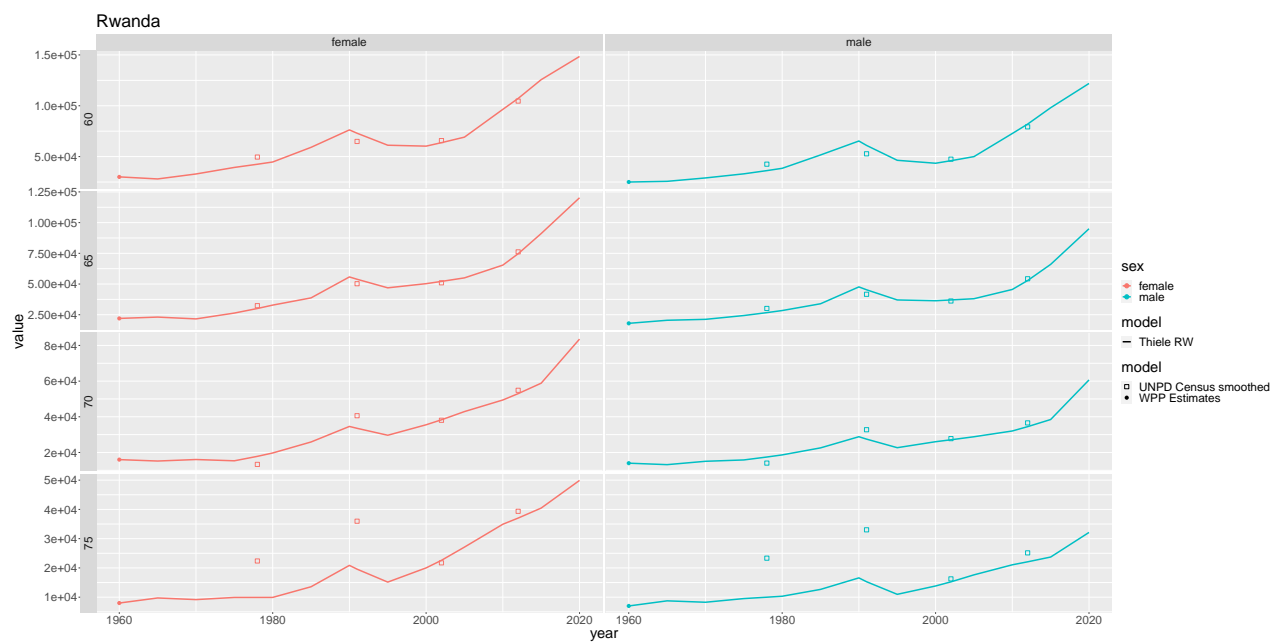


Figure 13: Population

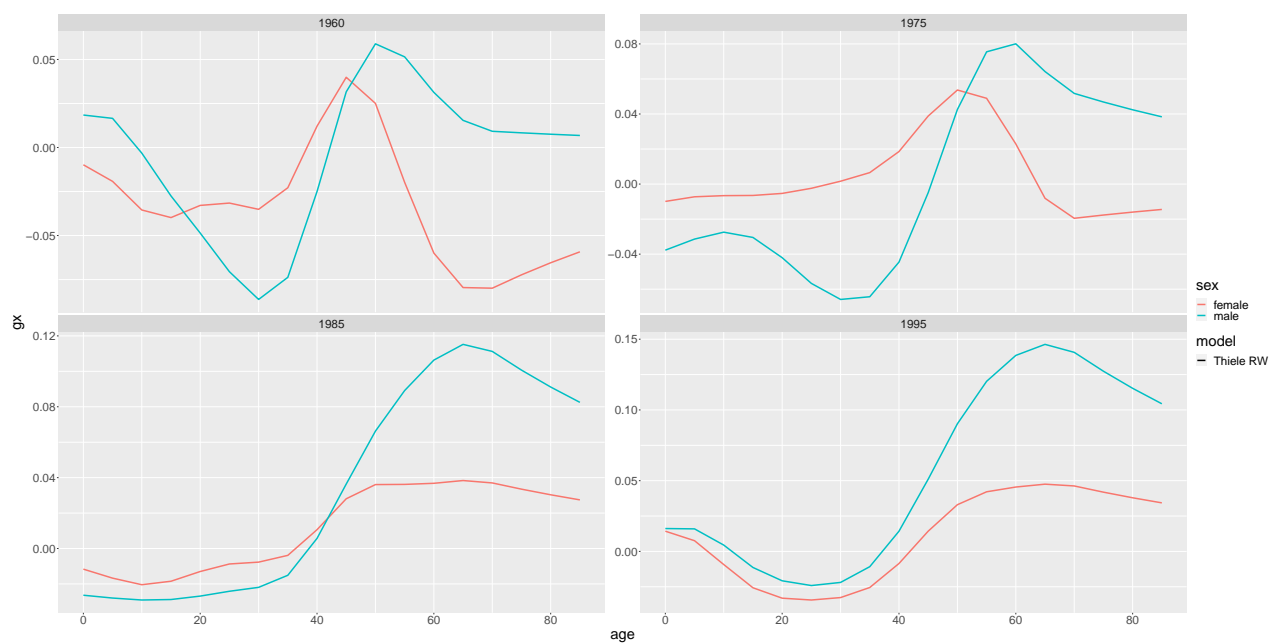


Figure 14: Migration

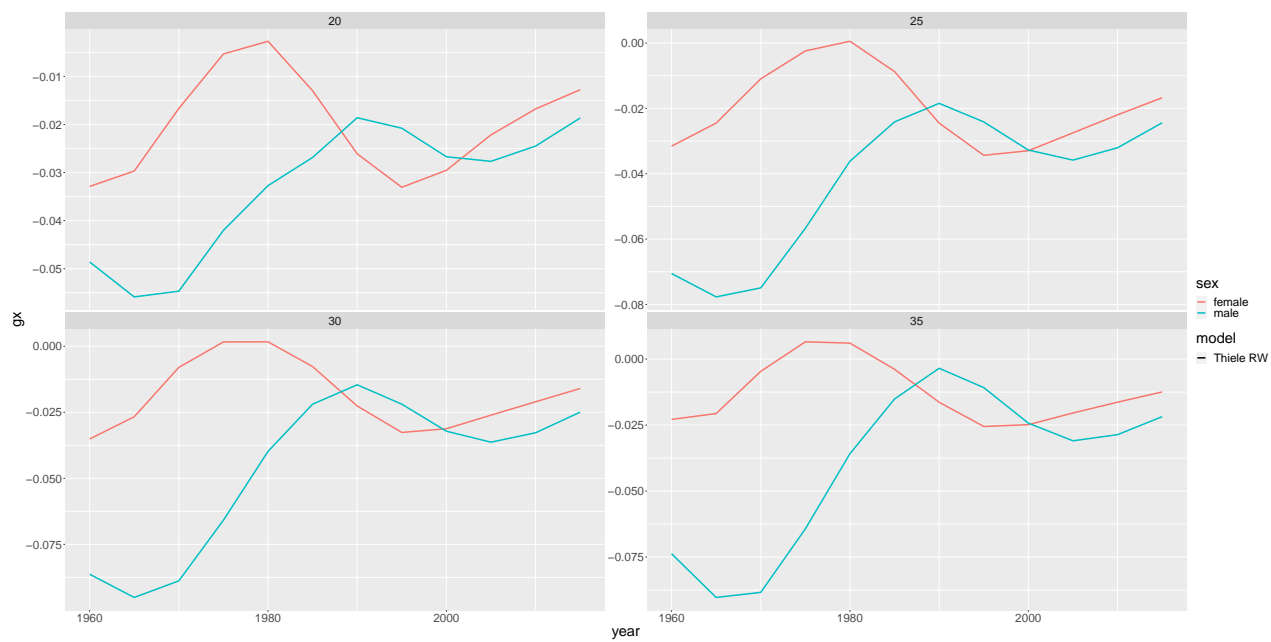


Figure 15: Migration

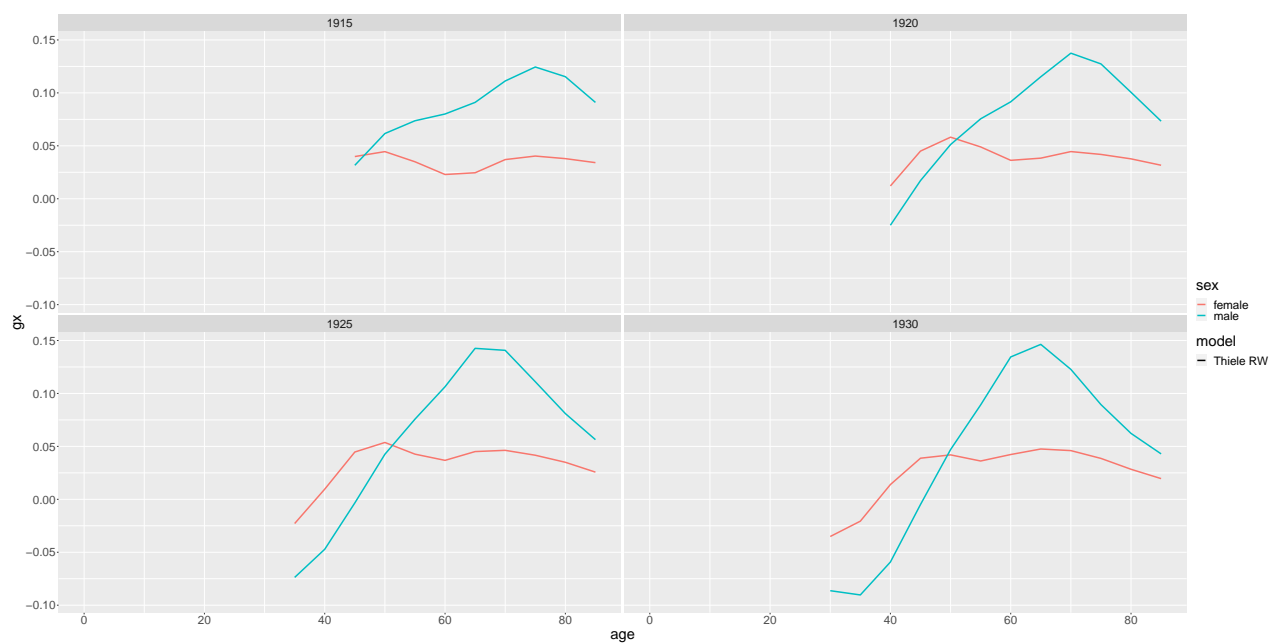


Figure 16: Migration

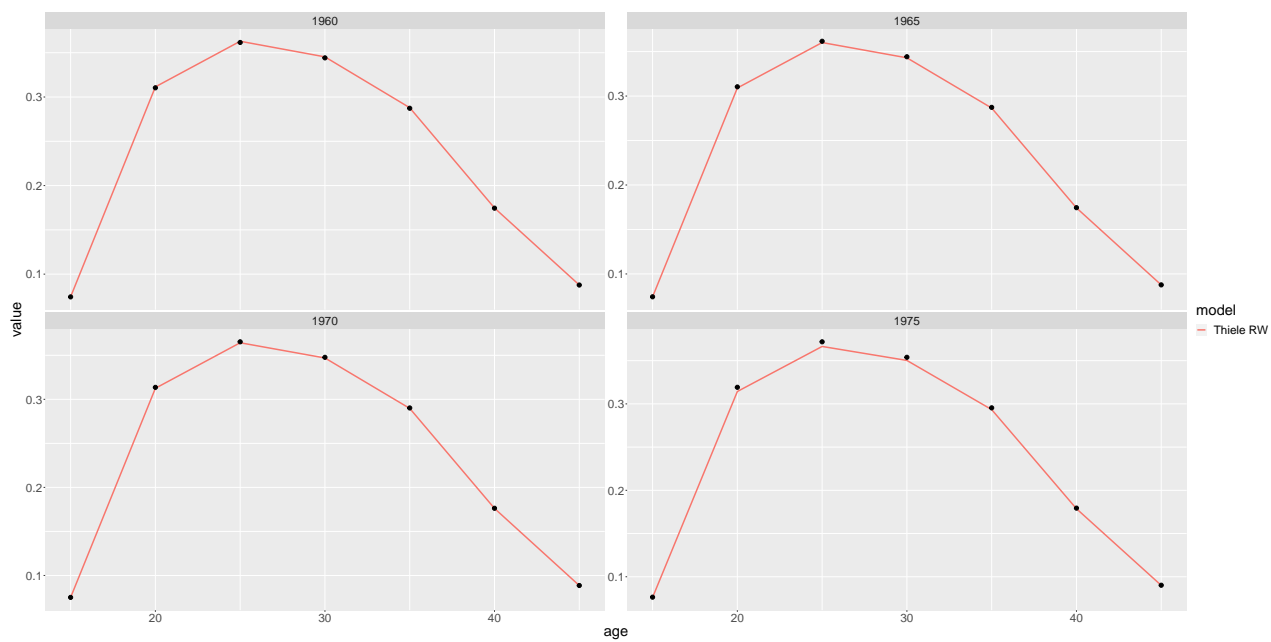


Figure 17: Fertility

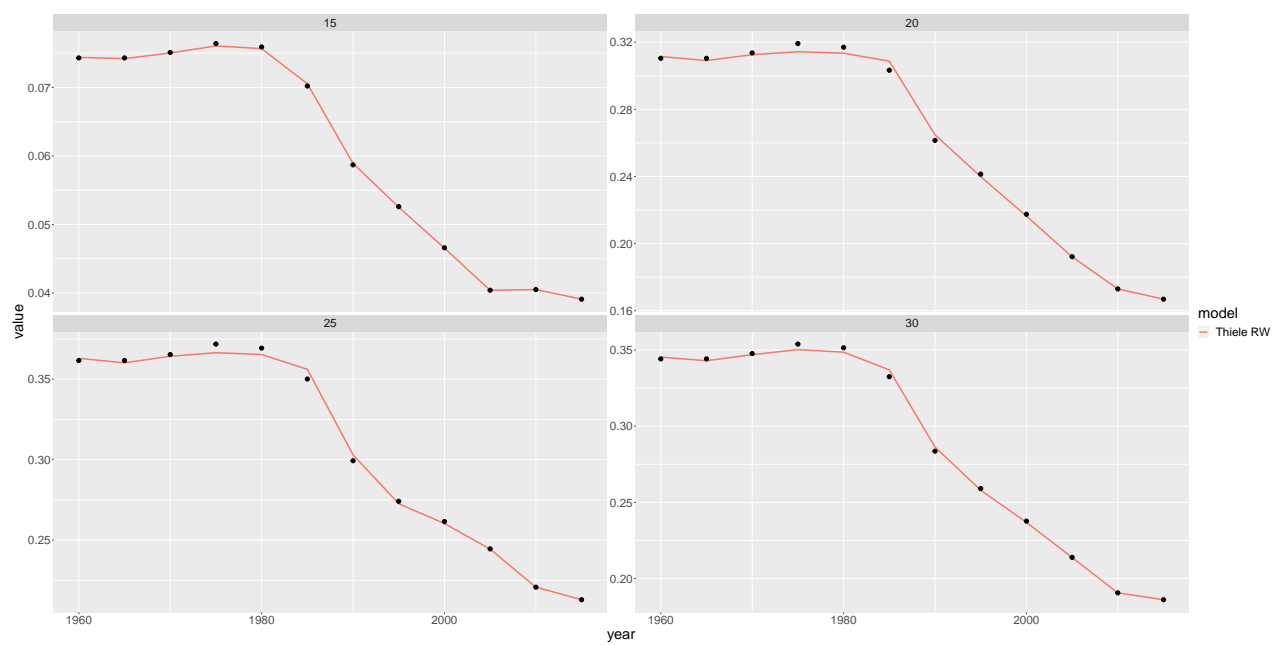


Figure 18: Fertility