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
## 92.80    0.23   93.56
```

```
## [1] "false convergence (8)"
```
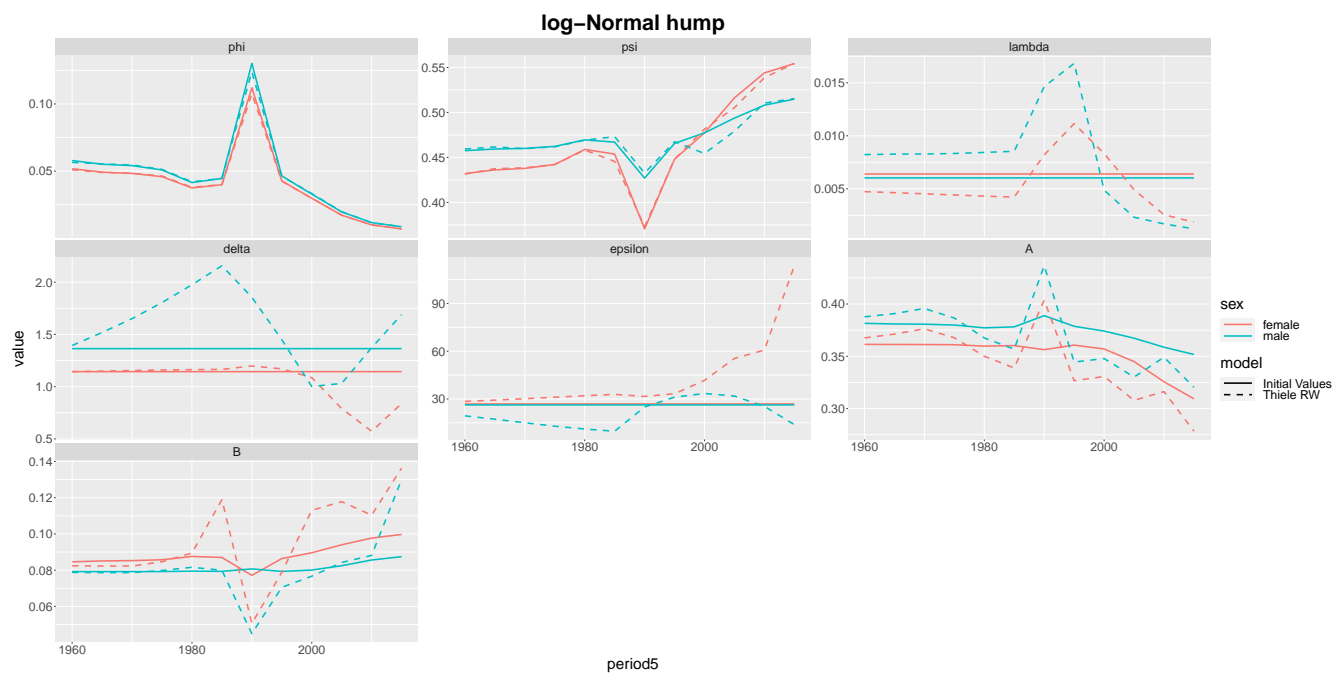
log−Normal hump

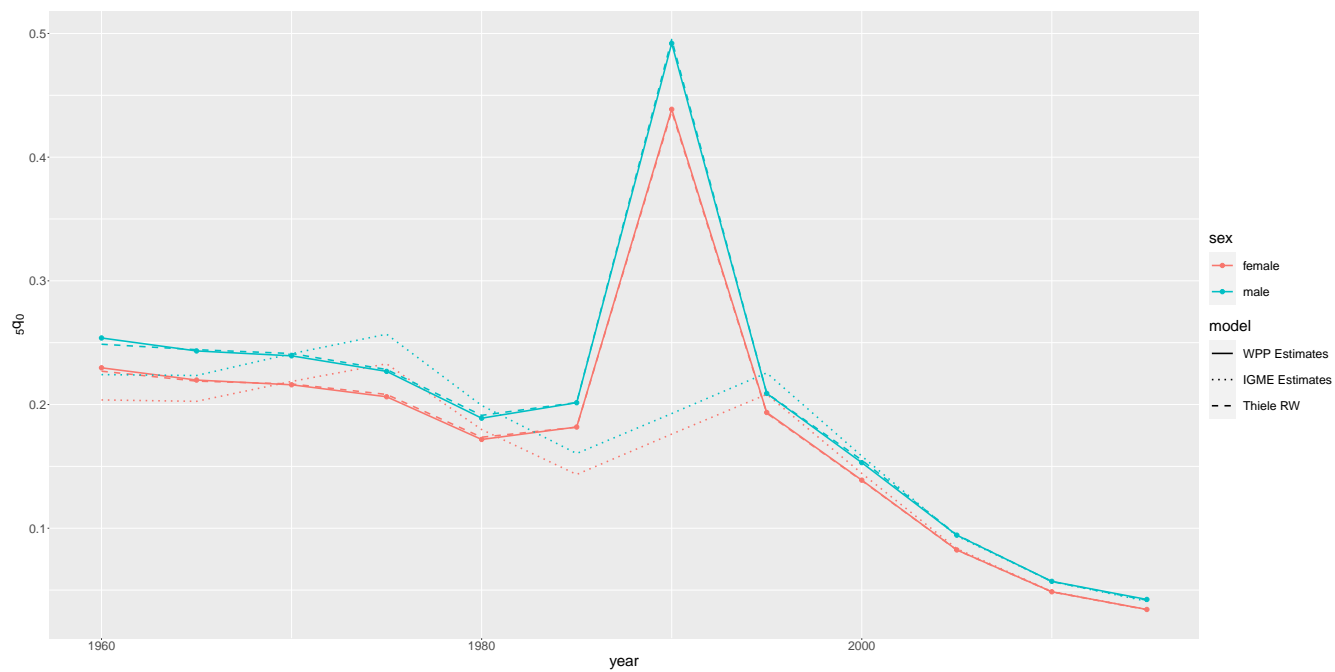Figure 1: Estimated parameters

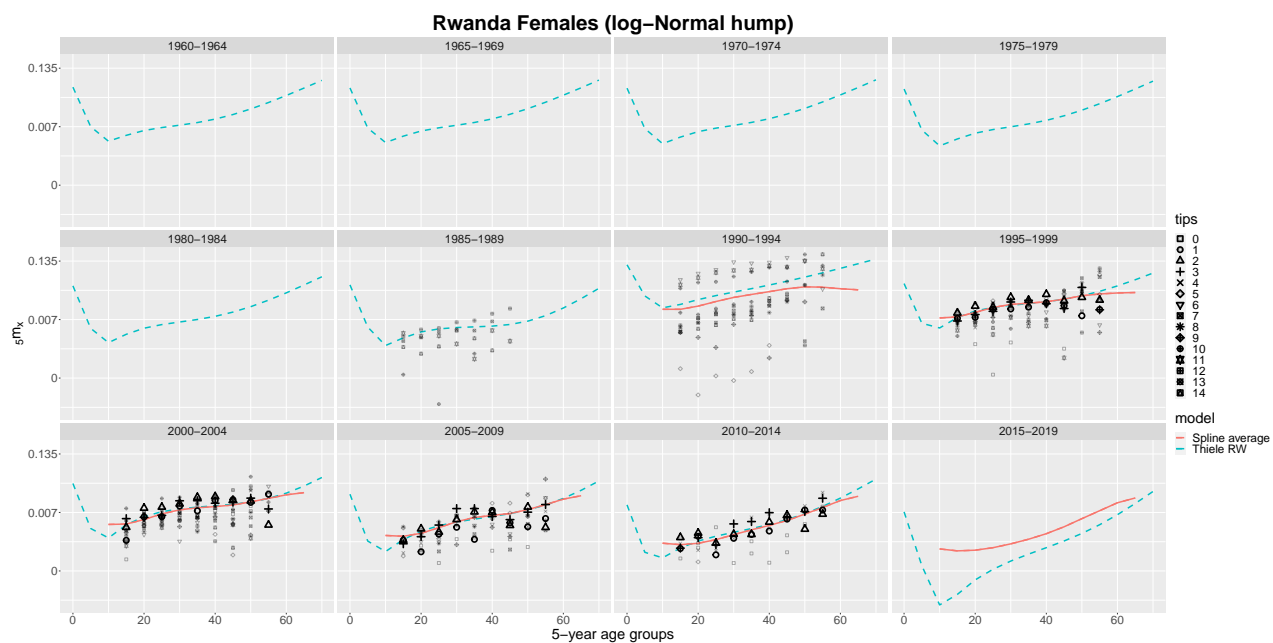Figure 2: Estimated $_{45}q_{15}$

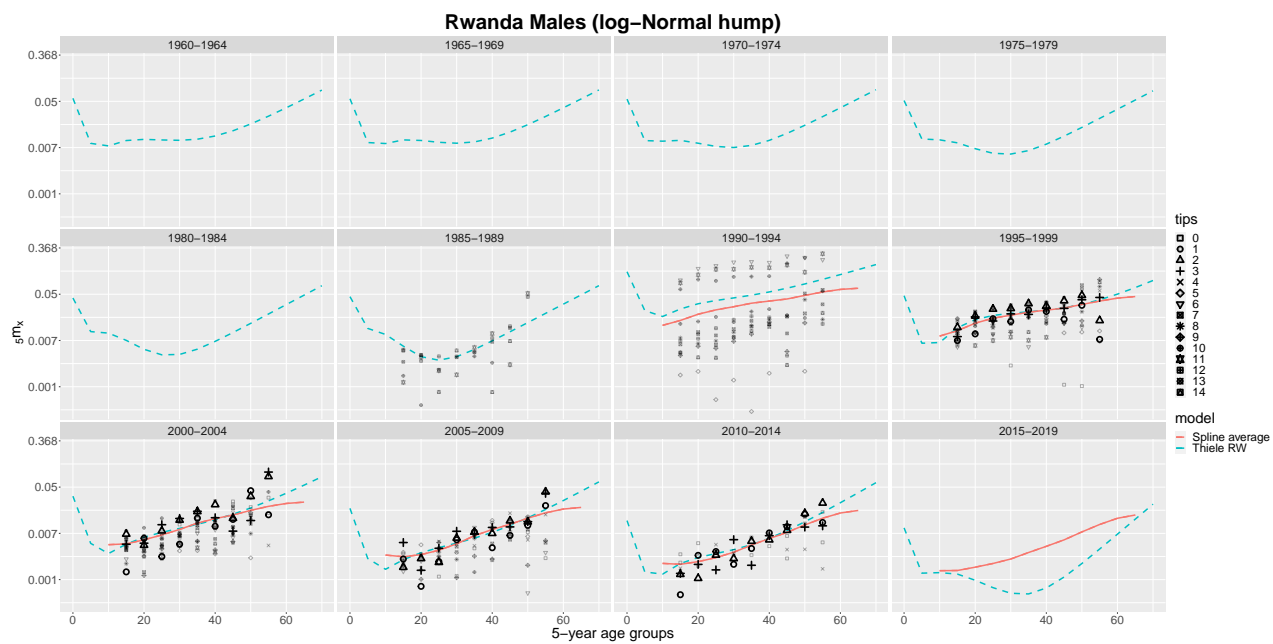Figure 3: Estimated $_5q_0$

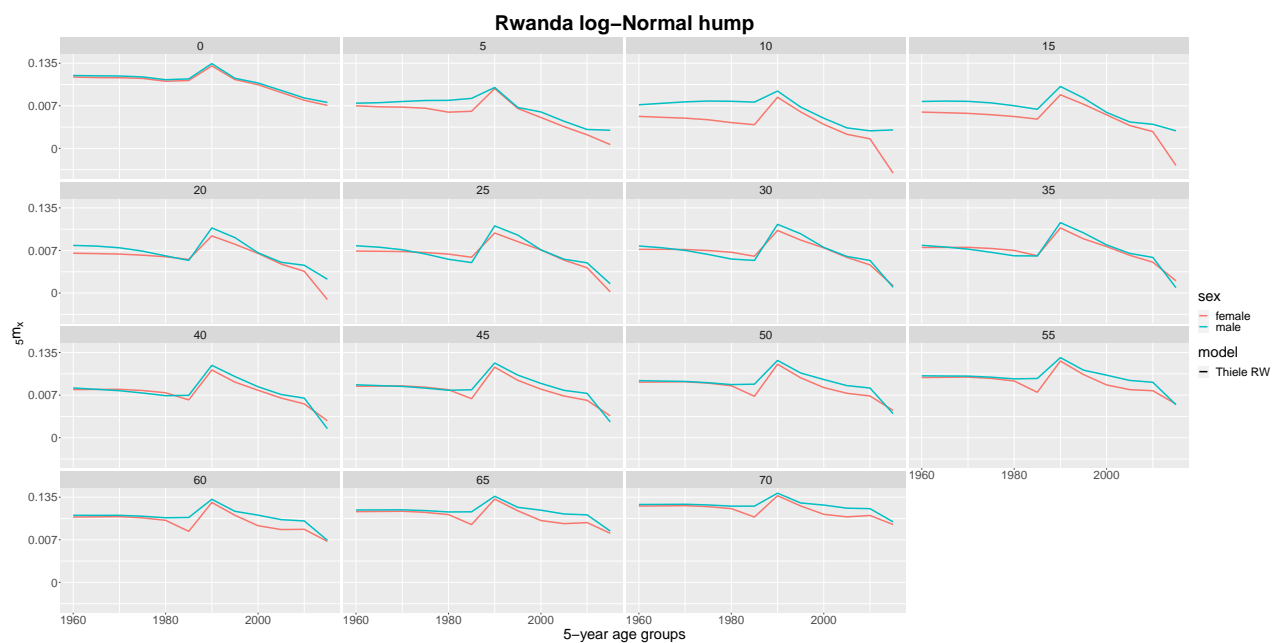Figure 4: Mortality Schedules

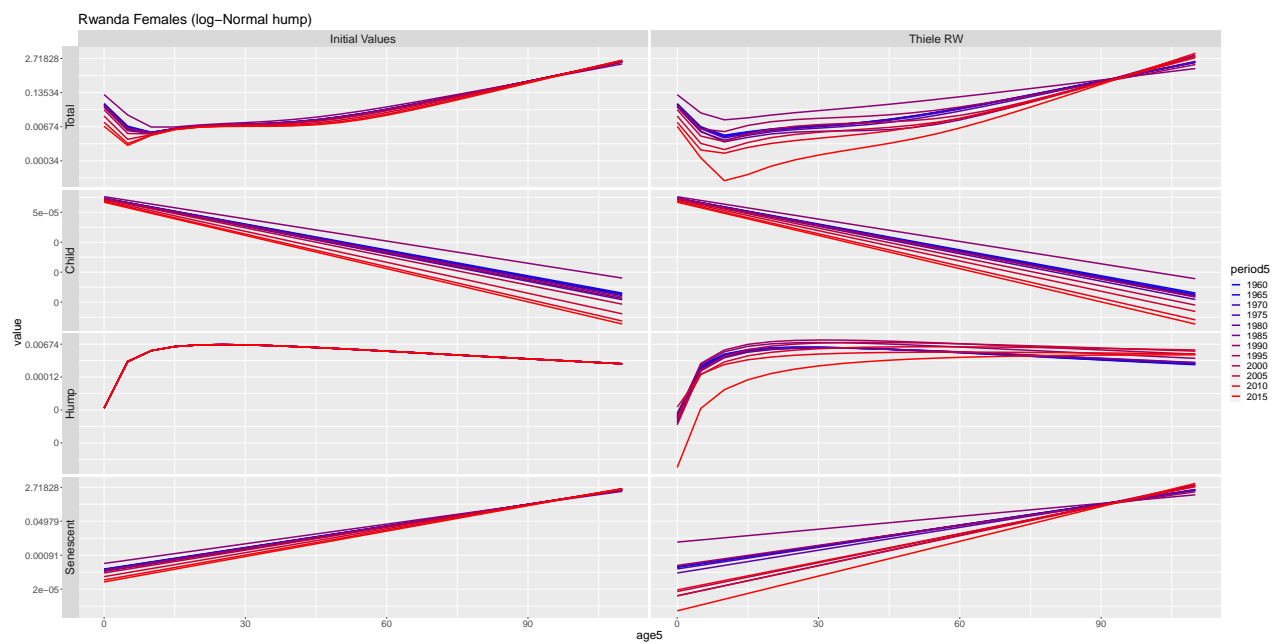Figure 5: Mortality Schedules

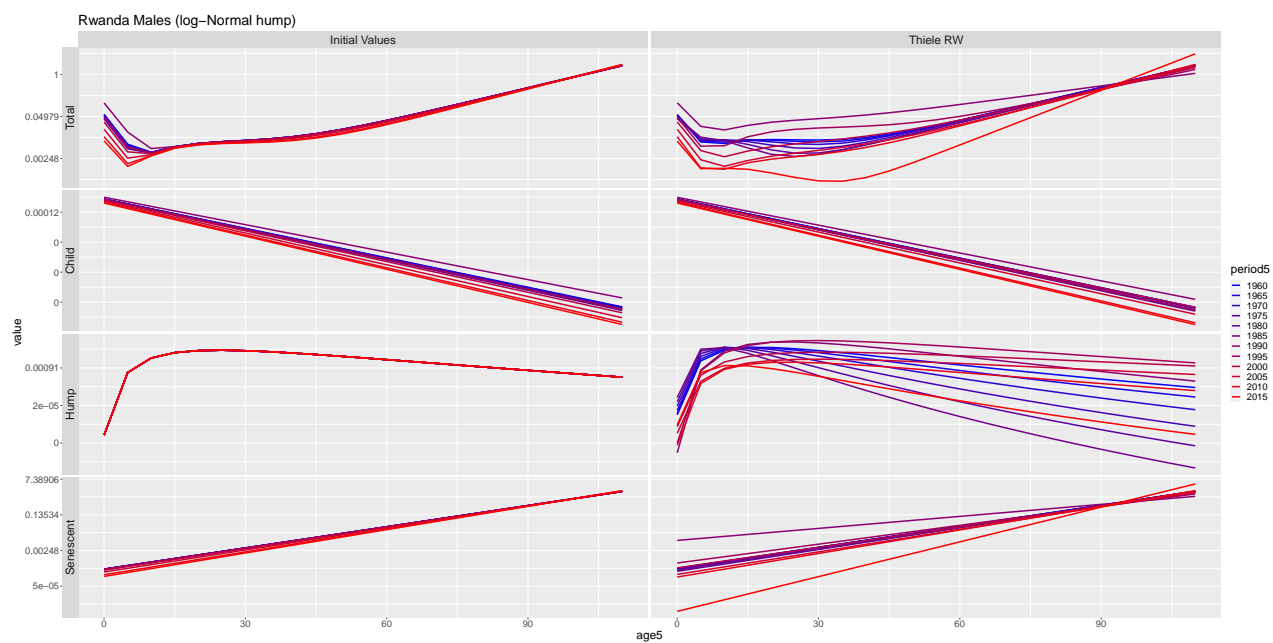Figure 6: Mortality Schedules

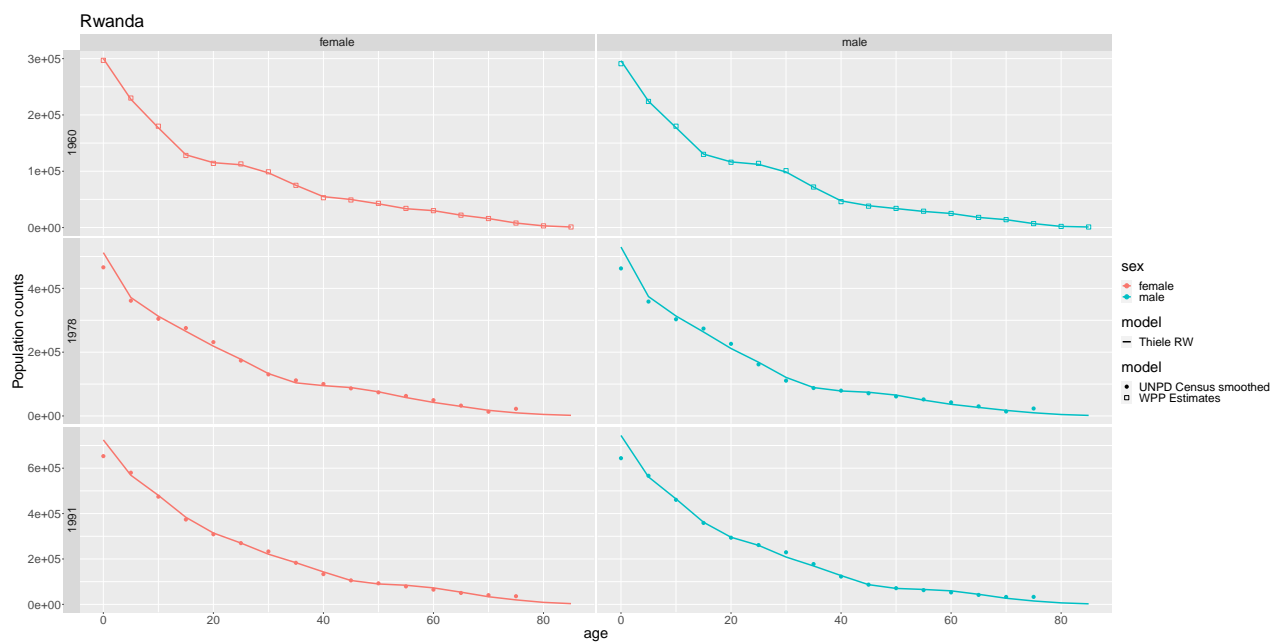Figure 7: Thiele Decomposed
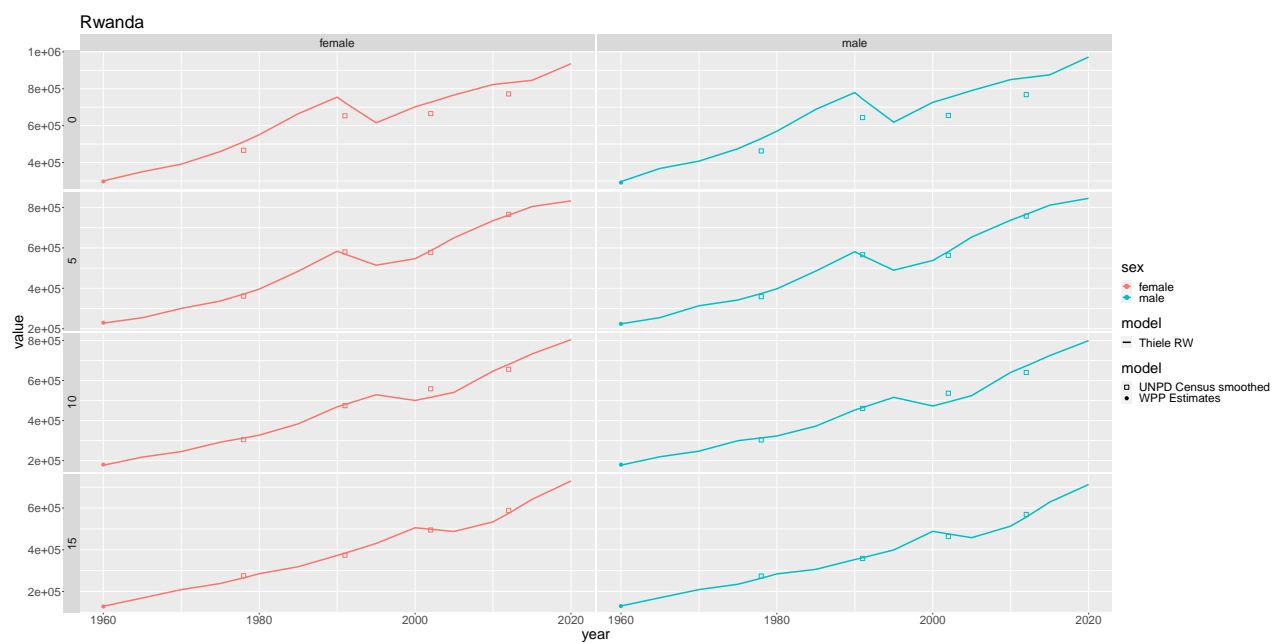
Figure 8: Thiele Decomposed
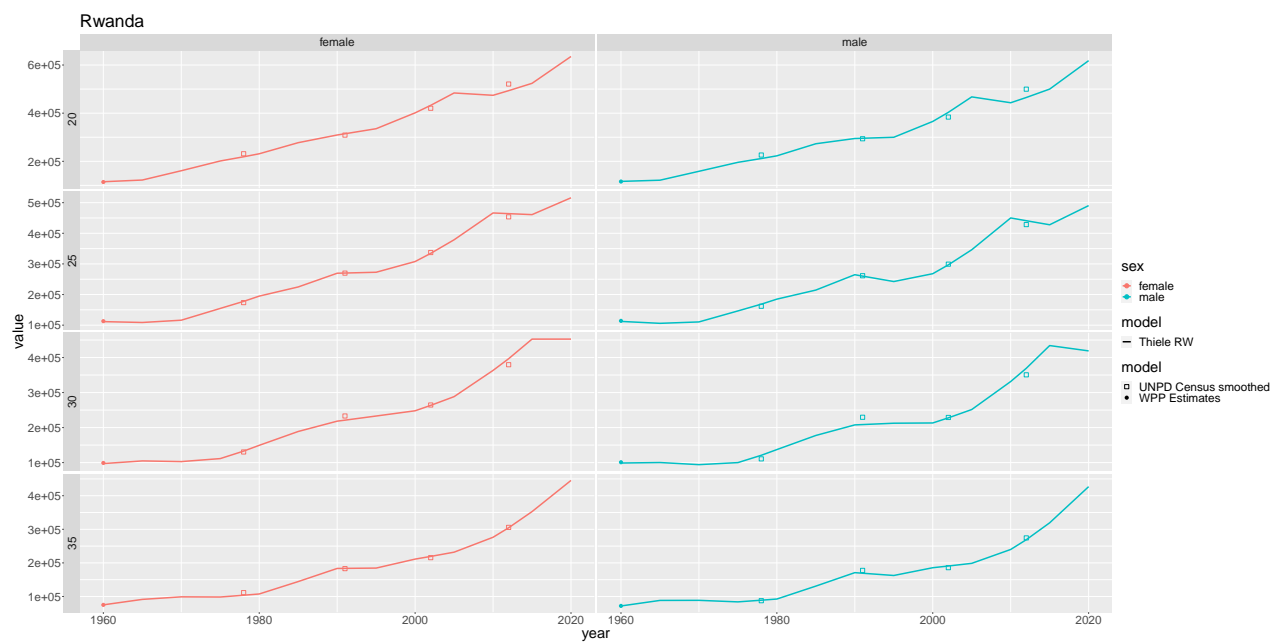

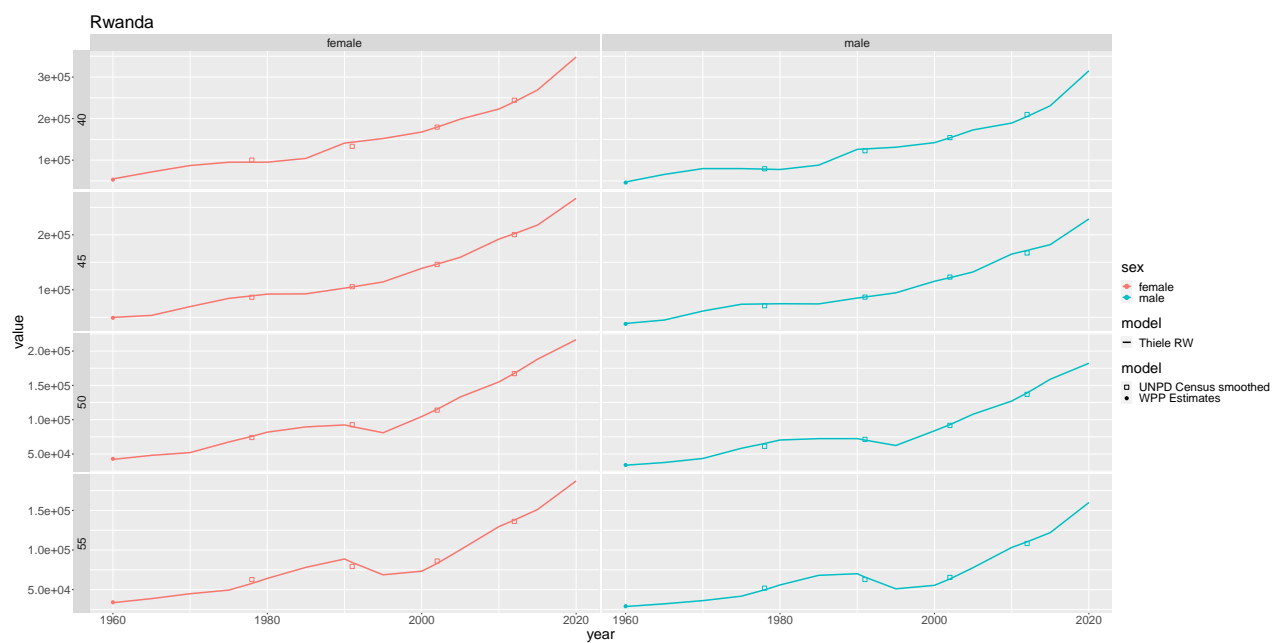Figure 9: Population

Figure 10: Population

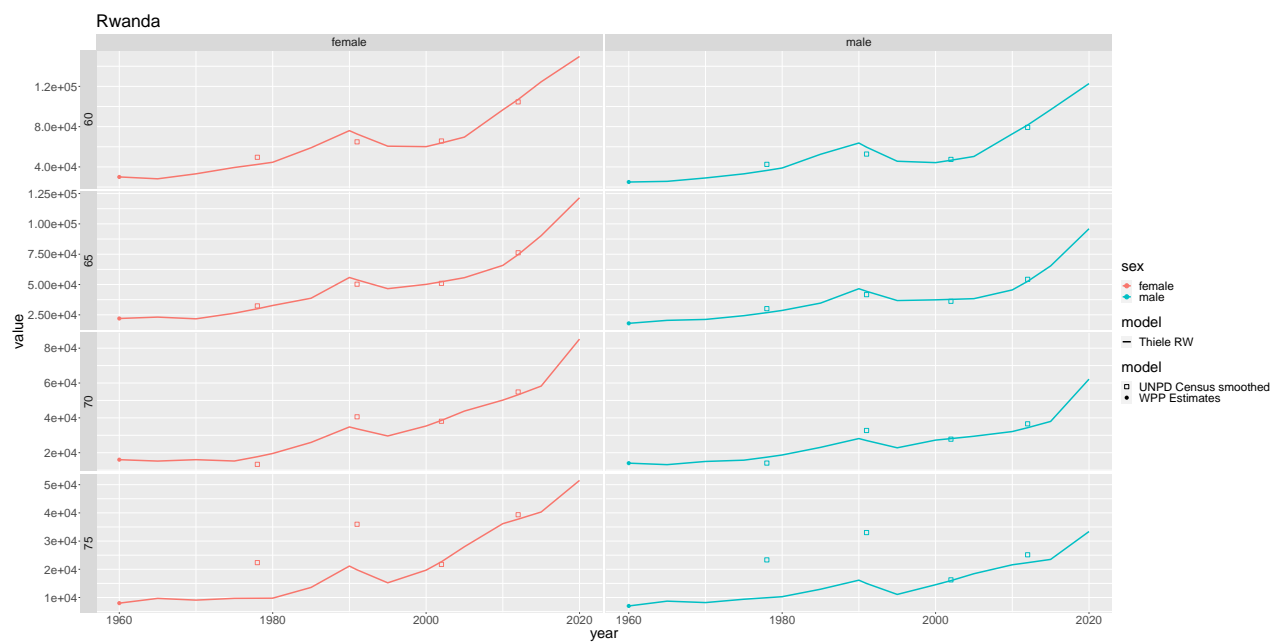Figure 11: Population

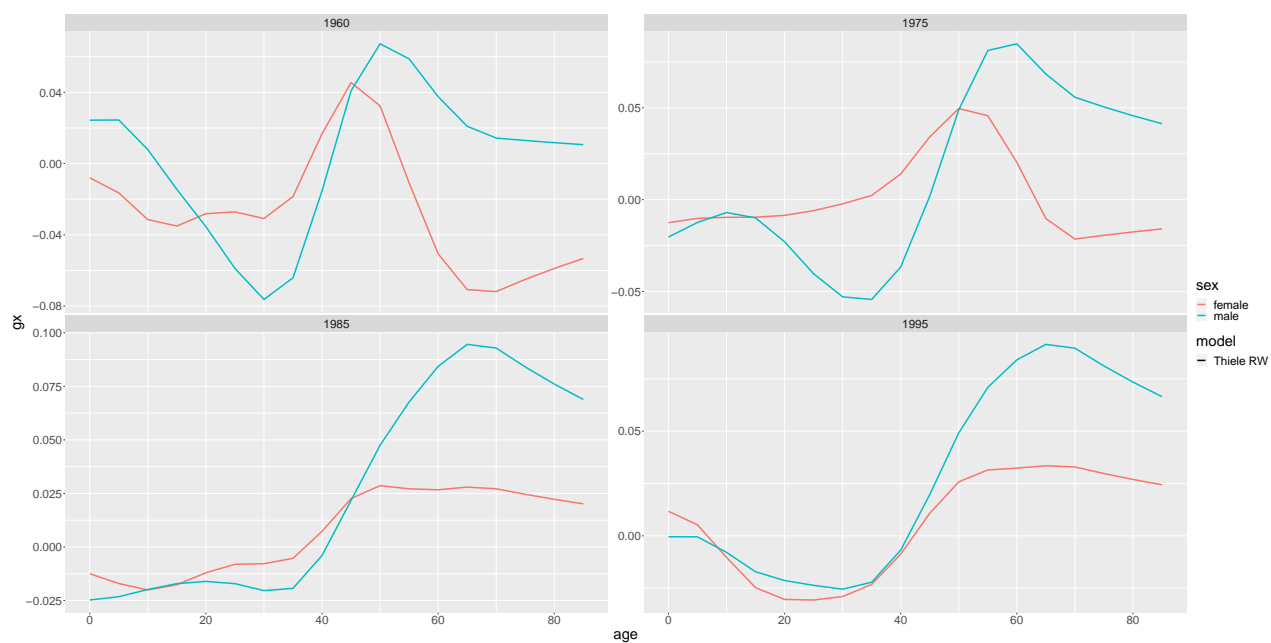Figure 12: Population
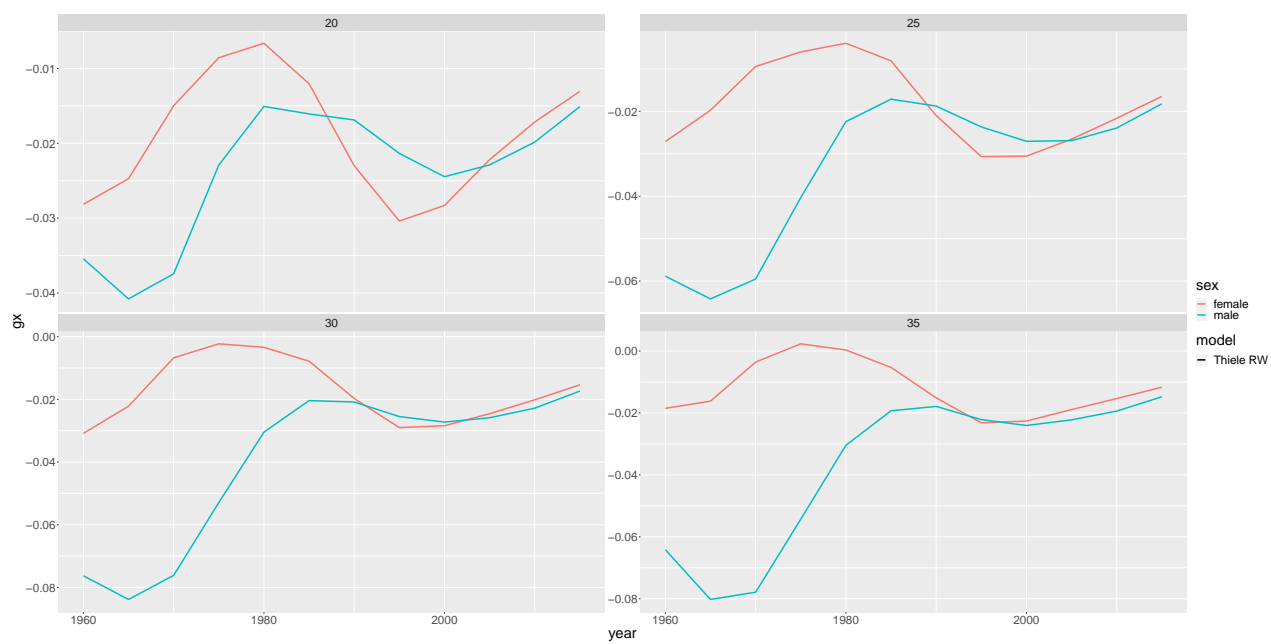

Figure 13: Population

9

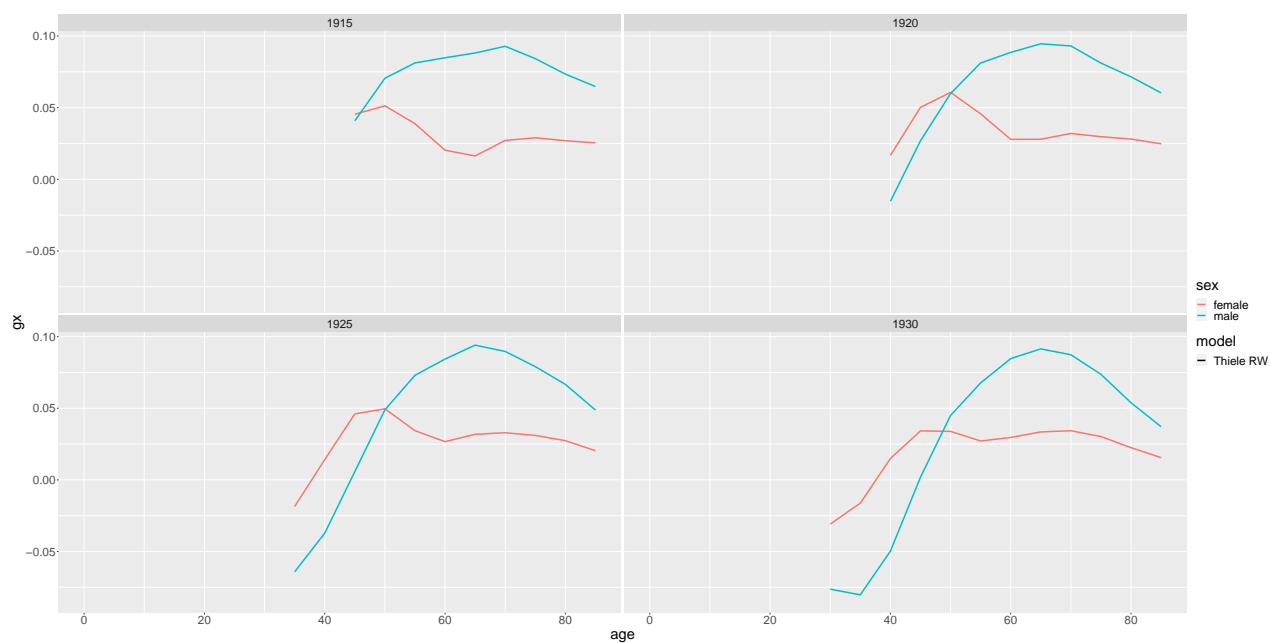Figure 14: Migration

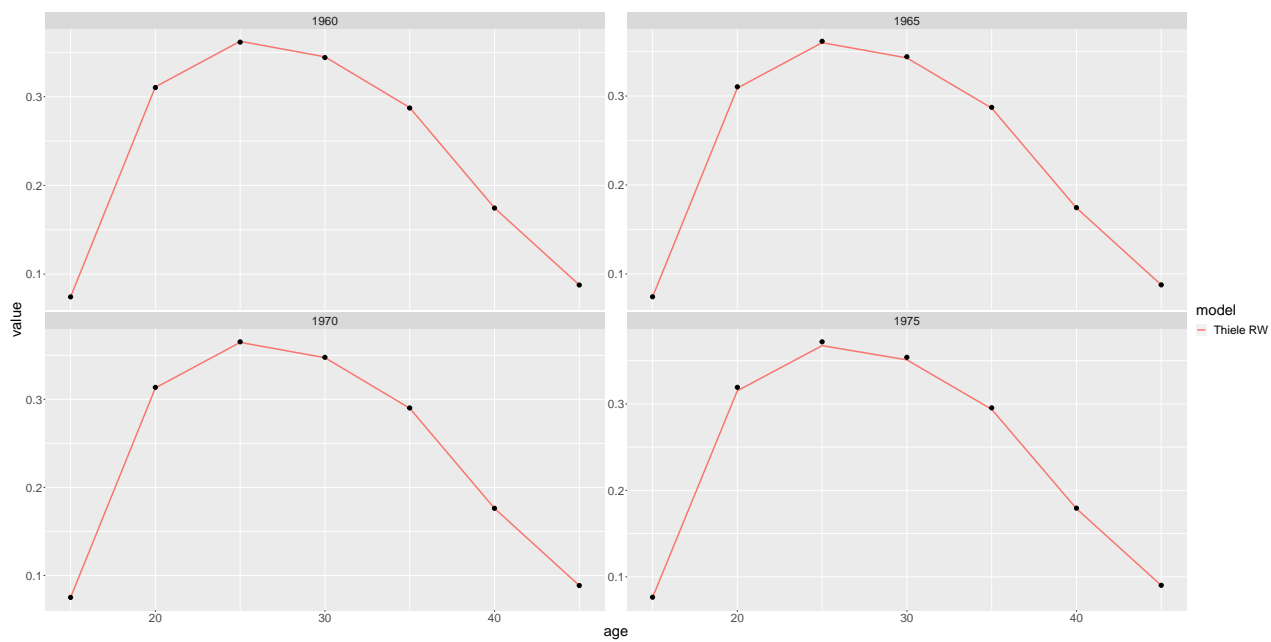Figure 15: Migration
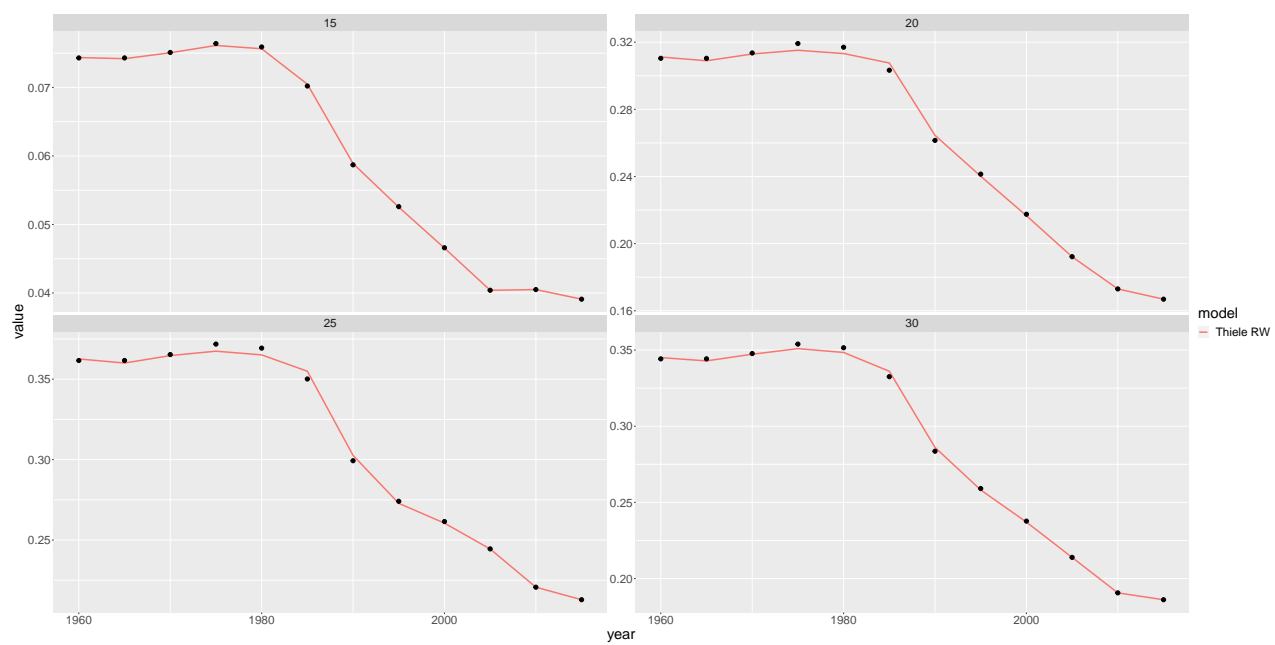
Figure 16: Migration

Figure 17: Fertility

11

Figure 18: Fertility