# Madagascar

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

## # A tibble: 18 x 3
##    aggr.age   `1993`    `2018`
## *     <dbl>    <dbl>     <dbl>
## 1         0 1112652  1869627
## 2         5  887806. 1762906.
## 3        10  762170. 1687188.
## 4        15  681774. 1558576
## 5        20  578889. 1303623
## 6        25  476792. 1037778.
## 7        30  394886.  843737
## 8        35  317271.  711511.
## 9        40  242574.  596038.
## 10       45  186136.  478968.
## 11       50  153940.  377220.
## 12       55  130986.  293019.
## 13       60  105274   221754.
## 14       65   77069   151646.
## 15       70   51143.   94472
## 16       75   26121    58834.
## 17       80   26112    36225.
## 18       85      NA    37896

## [1] "Census Males"

## # A tibble: 18 x 3
##    aggr.age   `1993`    `2018`
## *     <dbl>    <dbl>     <dbl>
## 1         0 1121953  1854072
## 2         5  904633  1781609.
## 3        10  770146. 1689022.
## 4        15  665691. 1487291
## 5        20  549330. 1195236.
## 6        25  451859   955468.
## 7        30  383614.  793154.
## 8        35  317992.  681935
## 9        40  242723.  587396.
## 10       45  178846.  481191.
## 11       50  144310   379979
## 12       55  124371.  295242.
## 13       60  103204.  222801
## 14       65   79529.  149608.
## 15       70   55241.   88961.
## 16       75   28062    52439.
## 17       80   23935    30494.
## 18       85      NA    29556.
```

*Thiele log-Normal Hump RW*

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

```
##     user  system elapsed
##    37.03    0.81   38.03

## [1] "false convergence (8)"
```
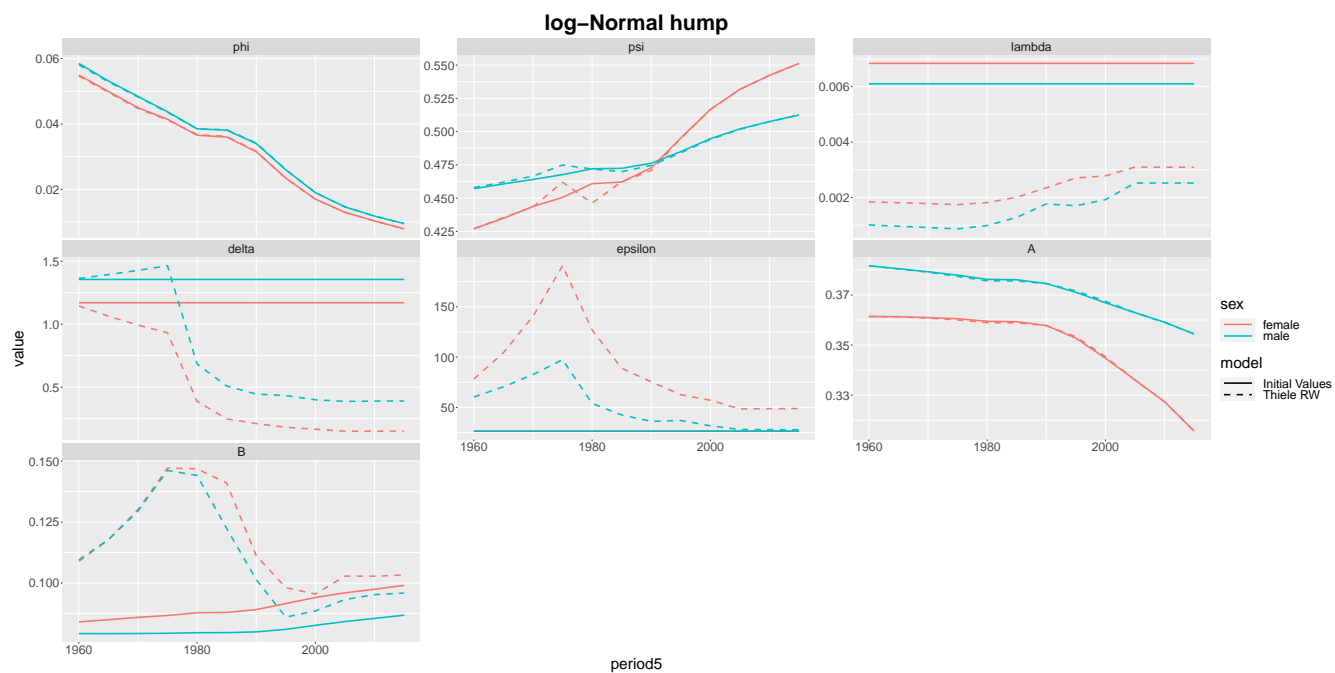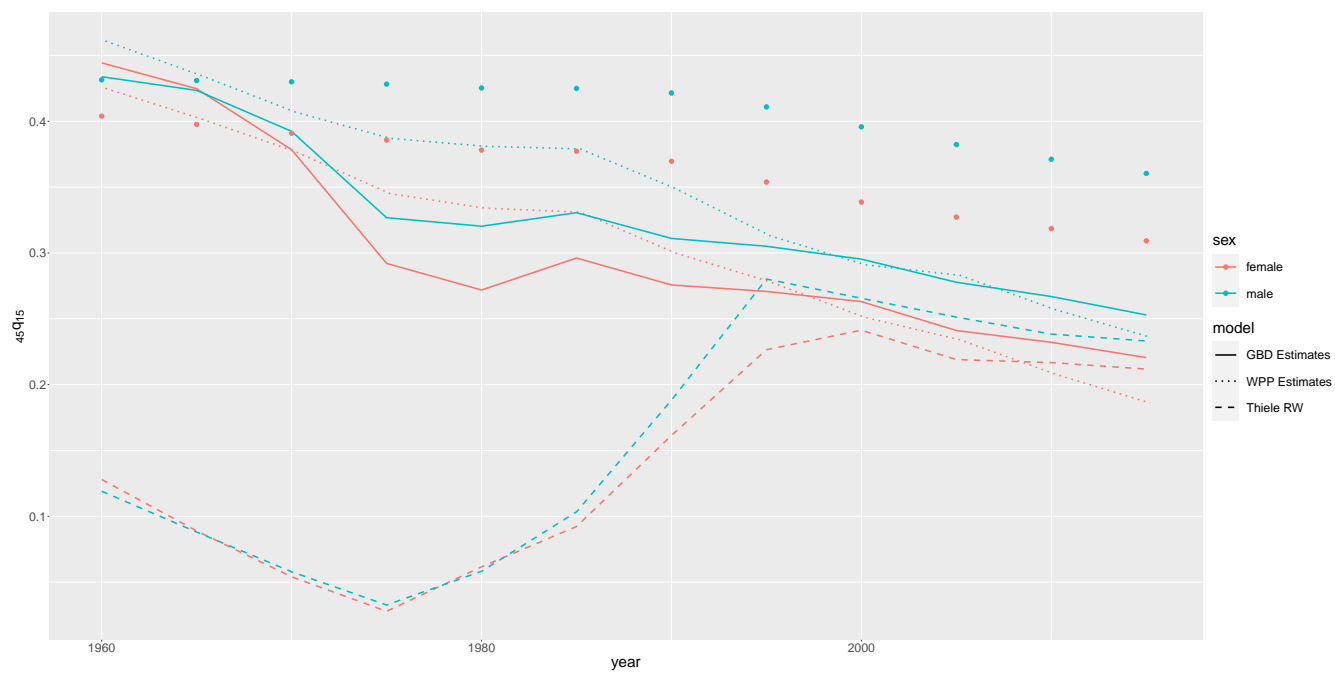
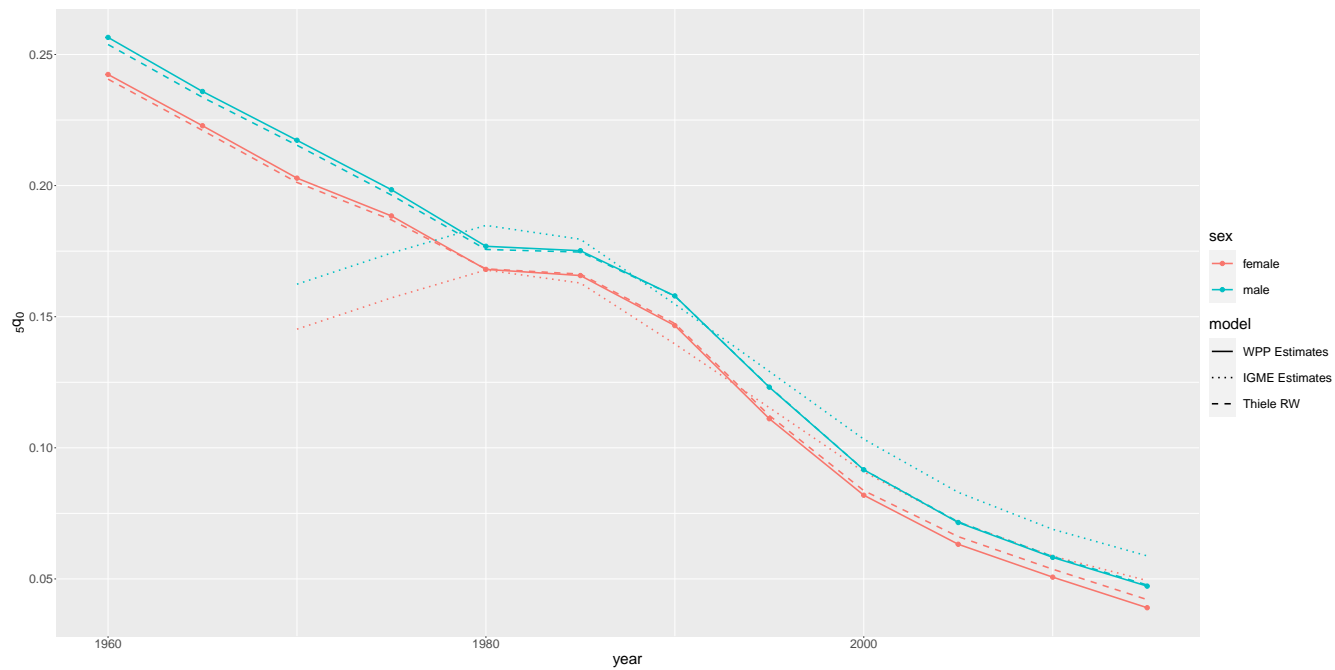Figure 1: Estimated parameters

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



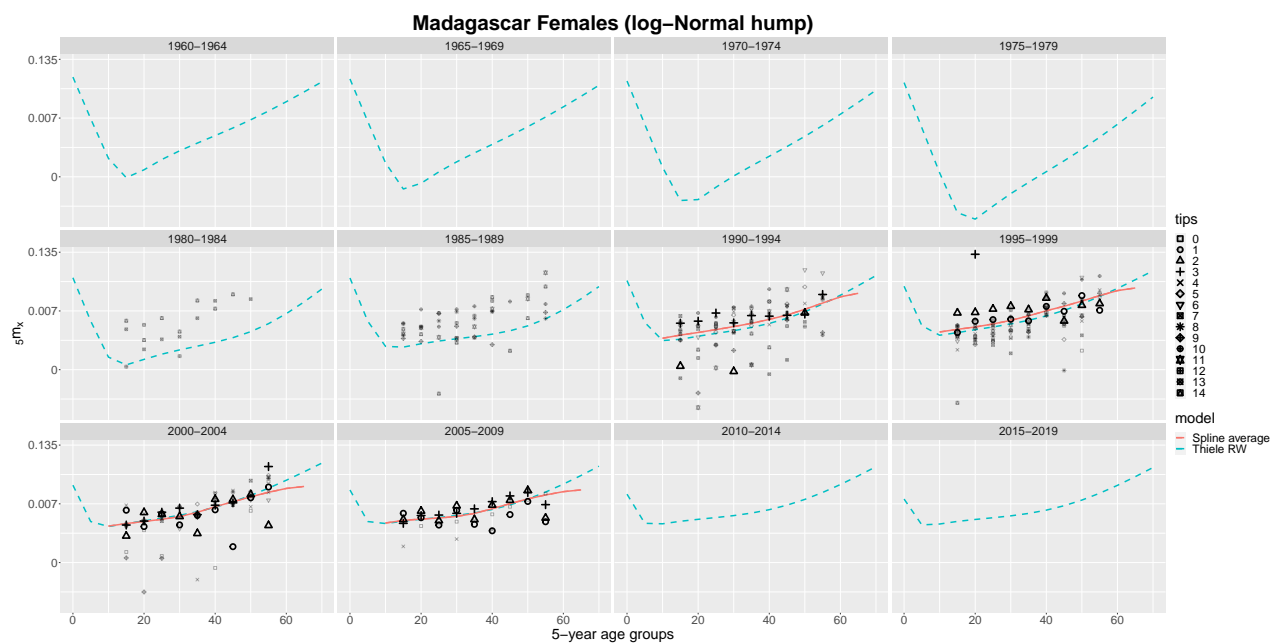Figure 3: Estimated $_5q_0$

Figure 4: Mortality Schedules

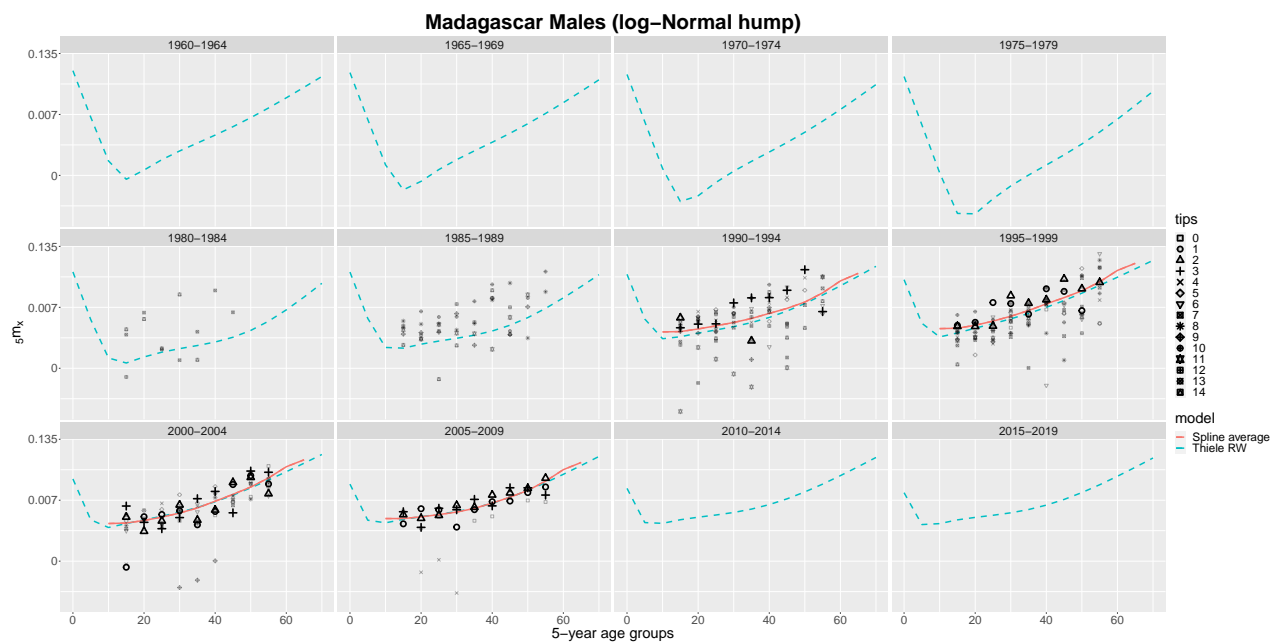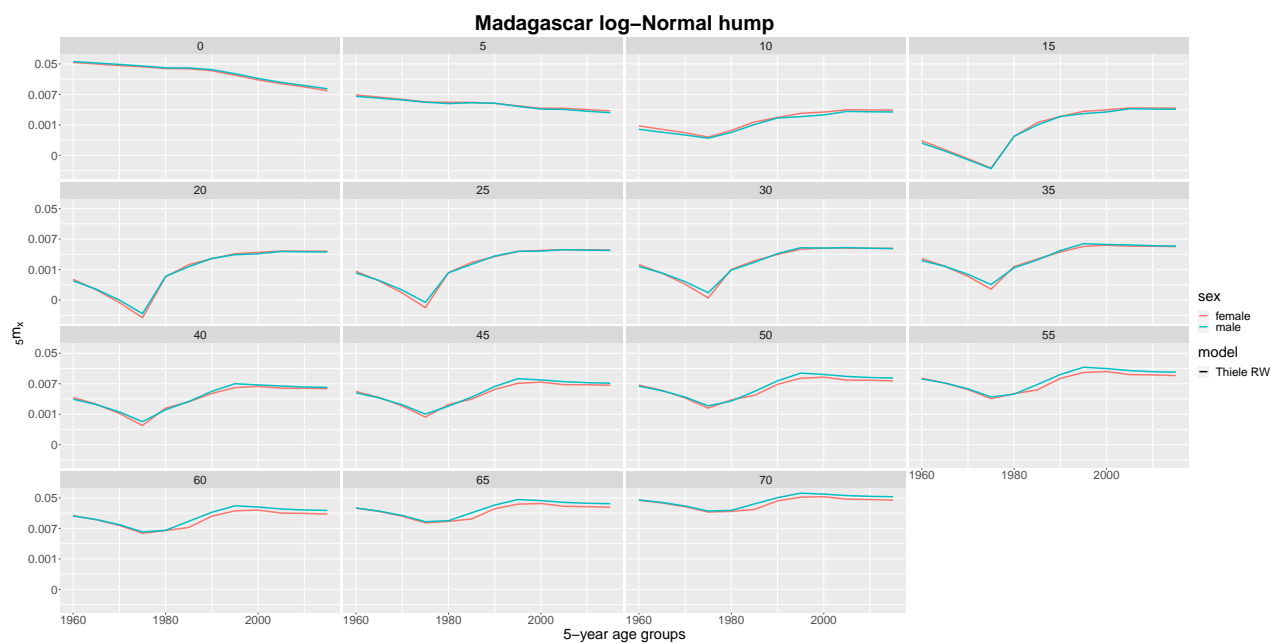

Figure 5: Mortality Schedules
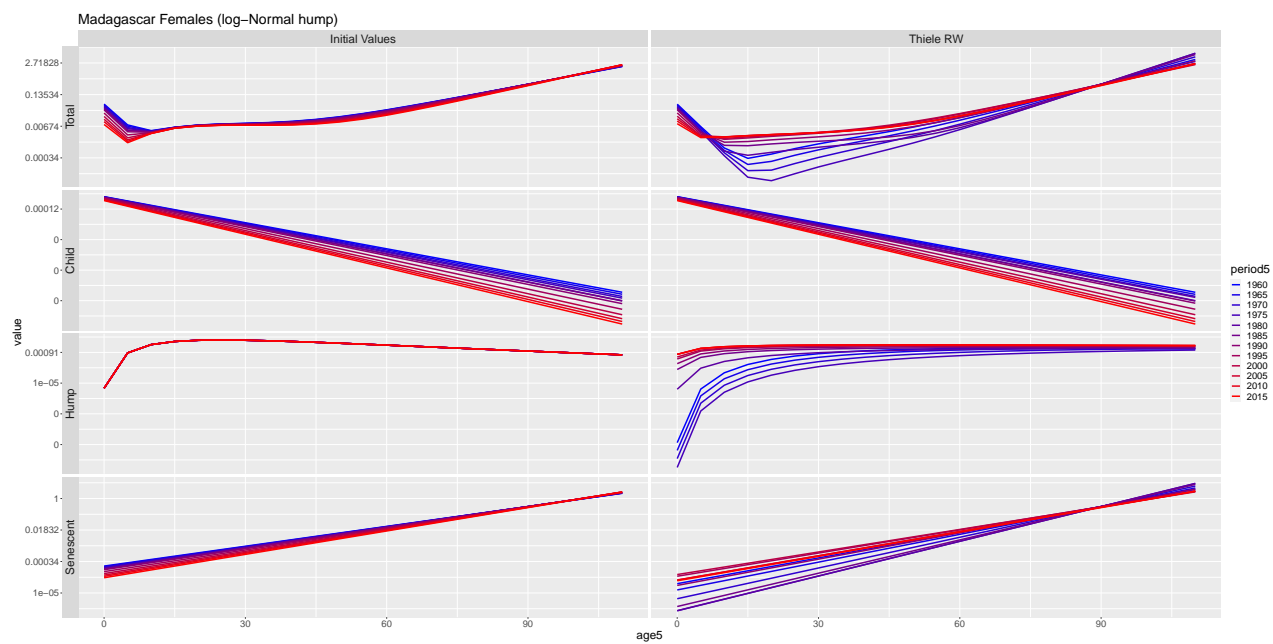
5

Figure 6: Mortality Schedules
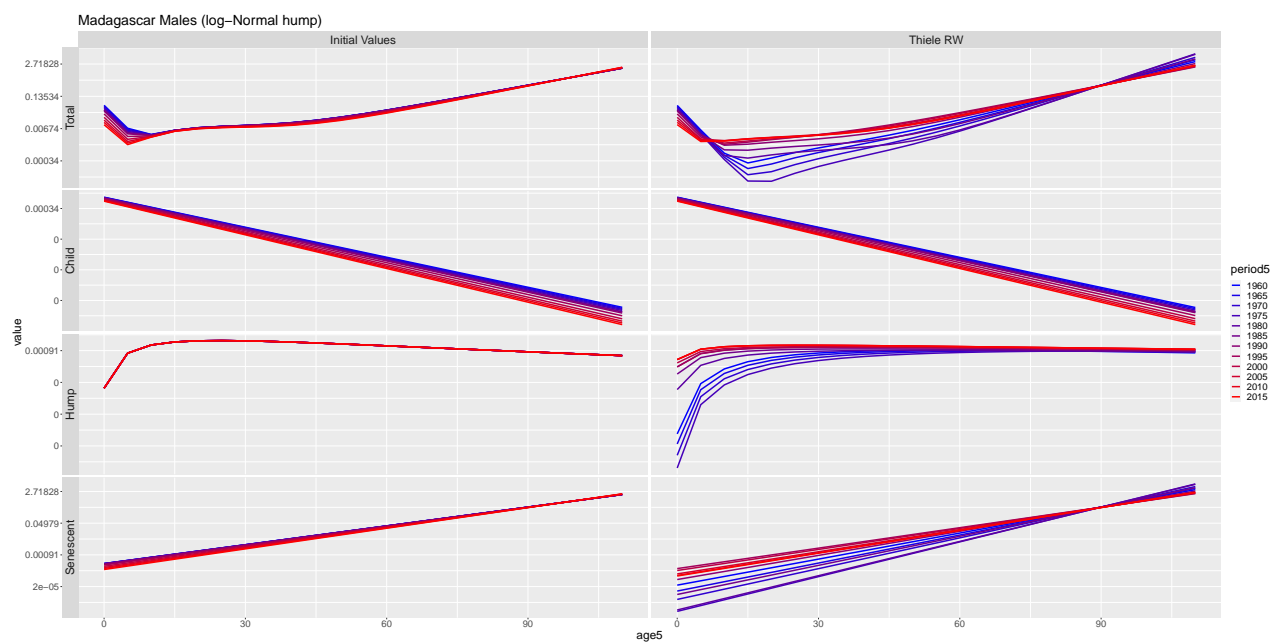


Figure 7: Thiele Decomposed

Figure 8: Thiele Decomposed
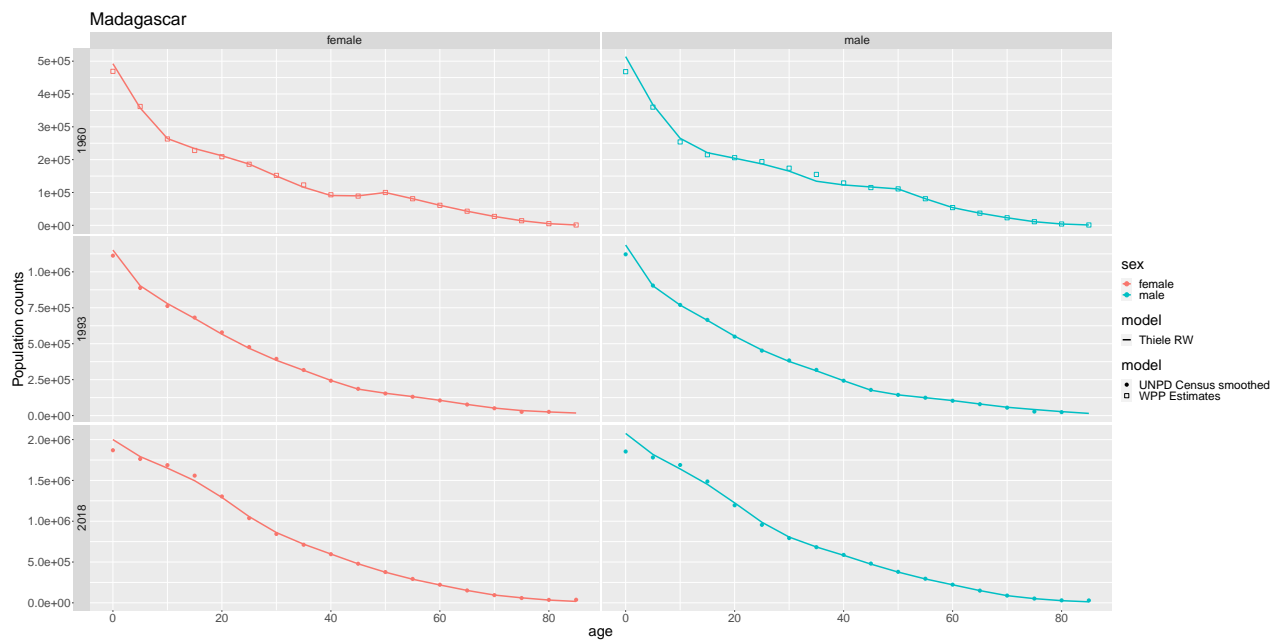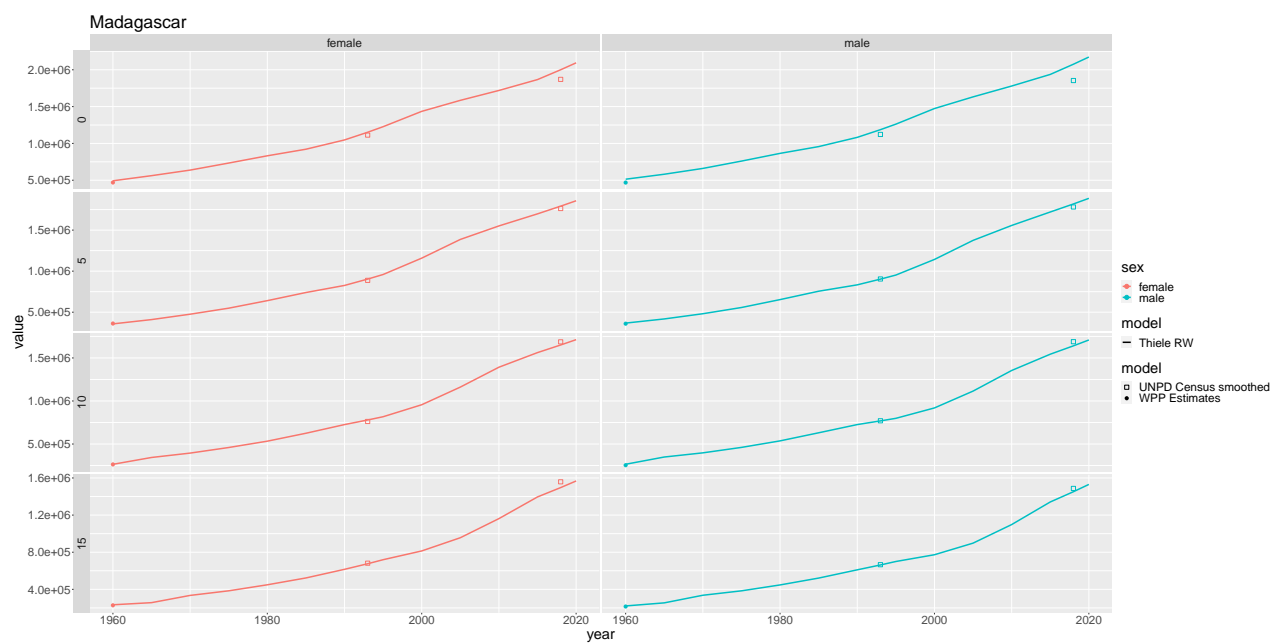


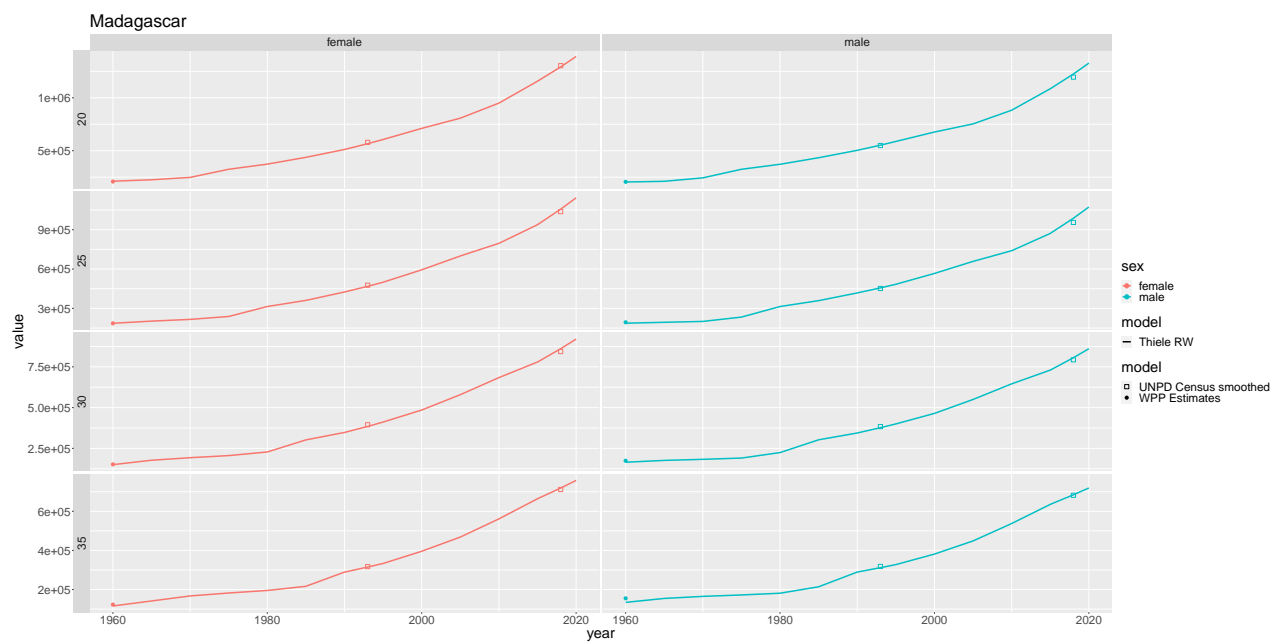Figure 9: Population

7

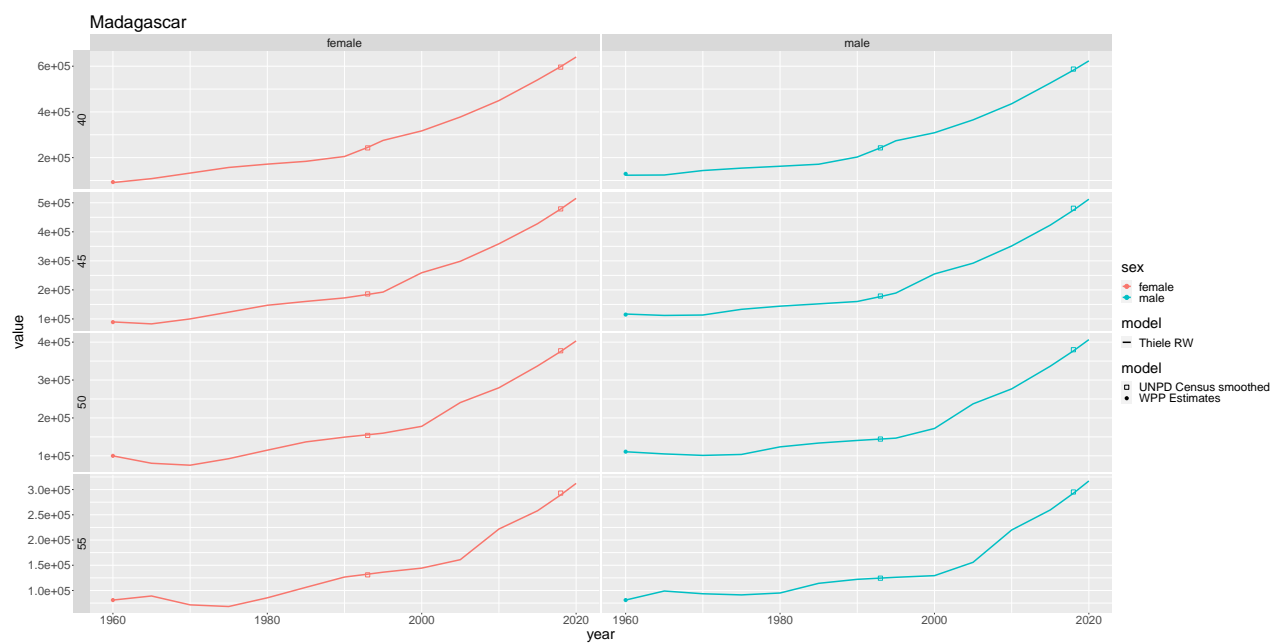Figure 10: Population



Figure 11: Population
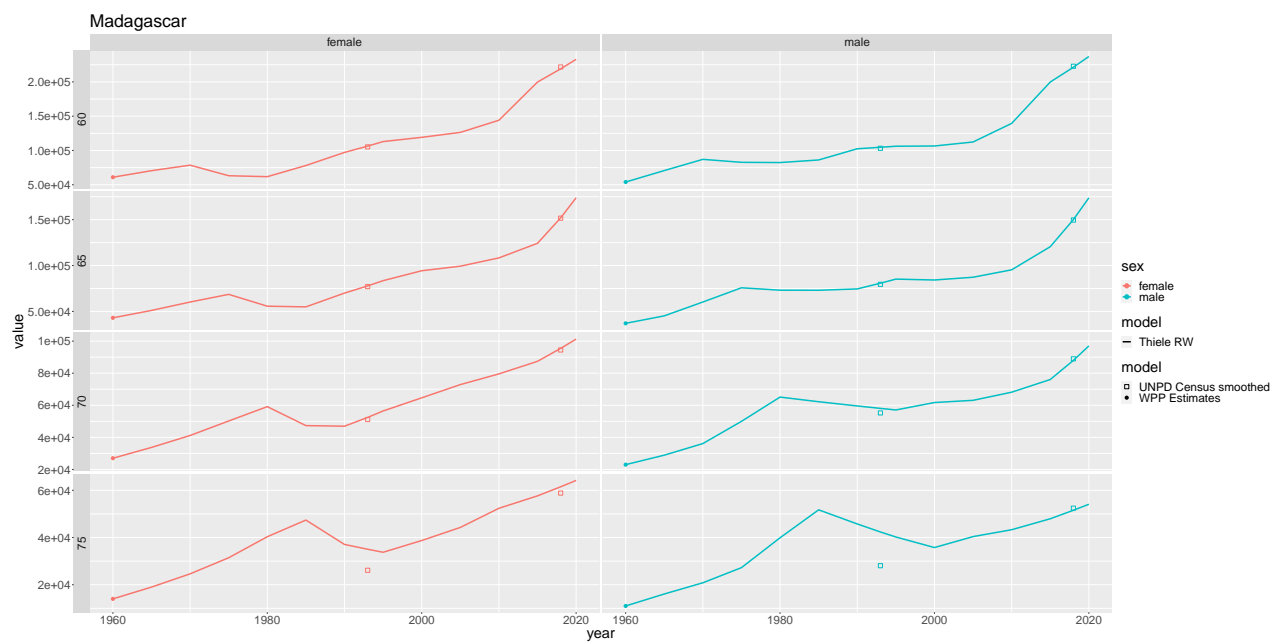
8

Figure 12: Population
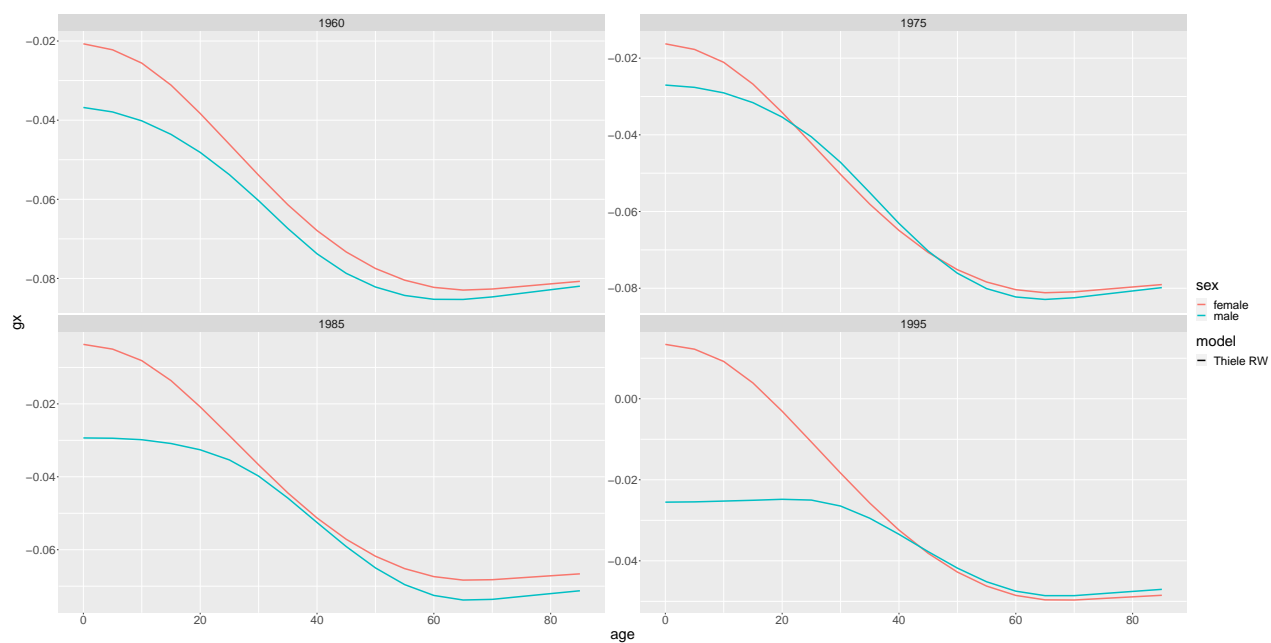


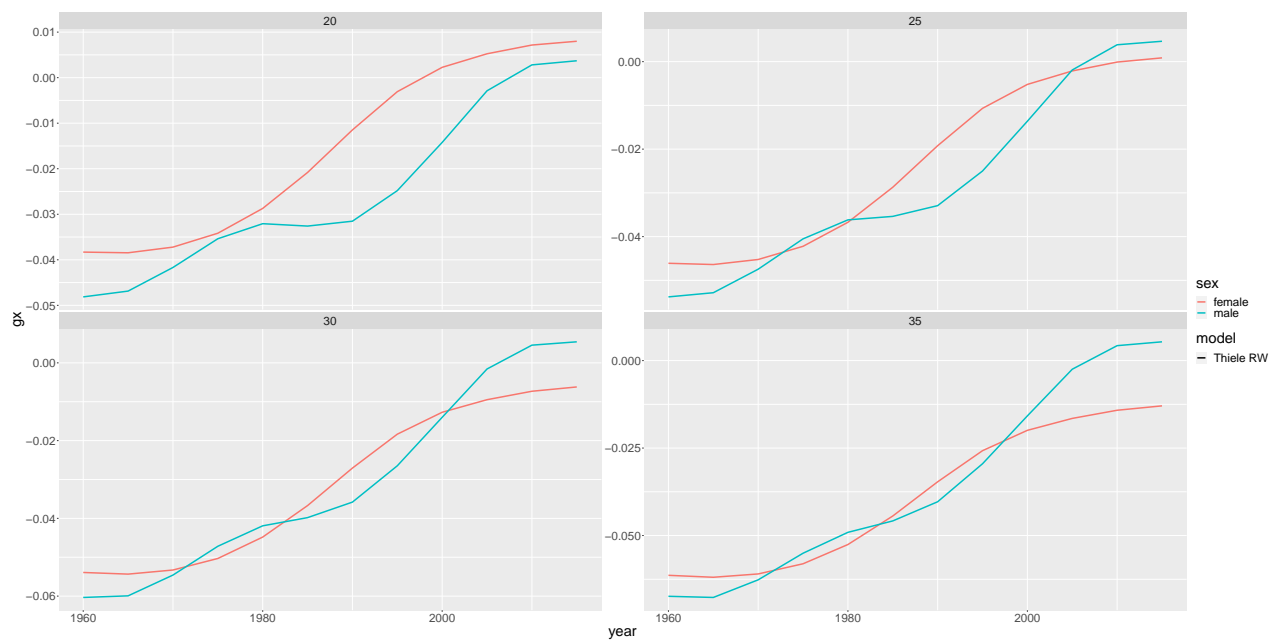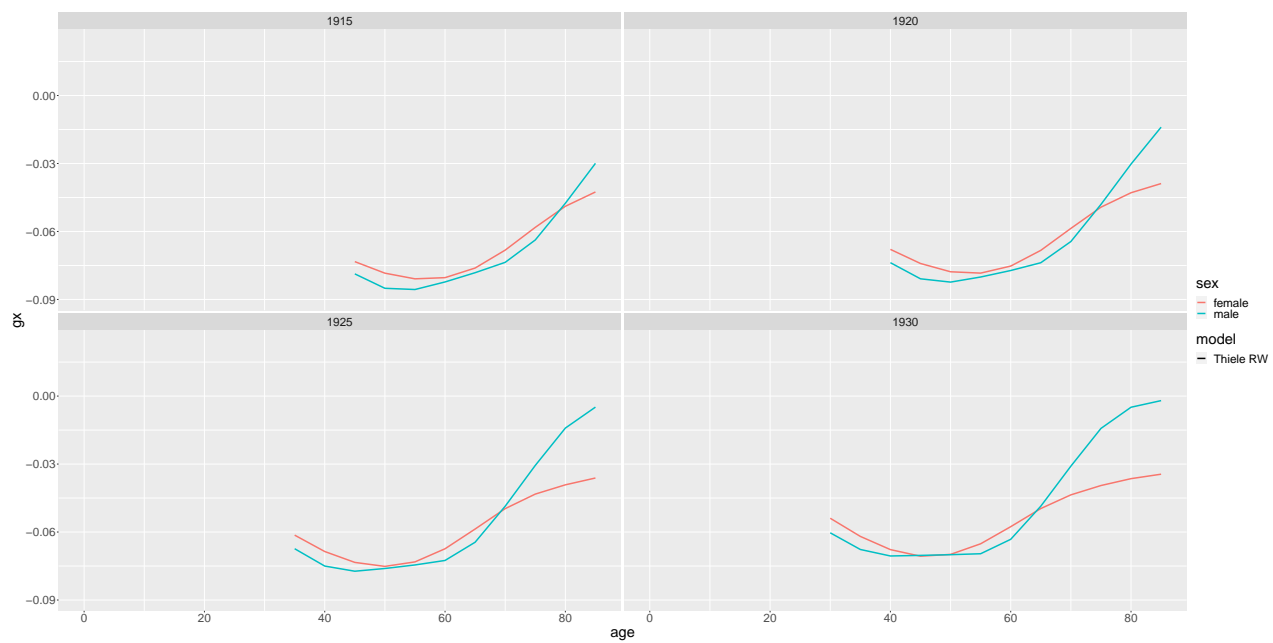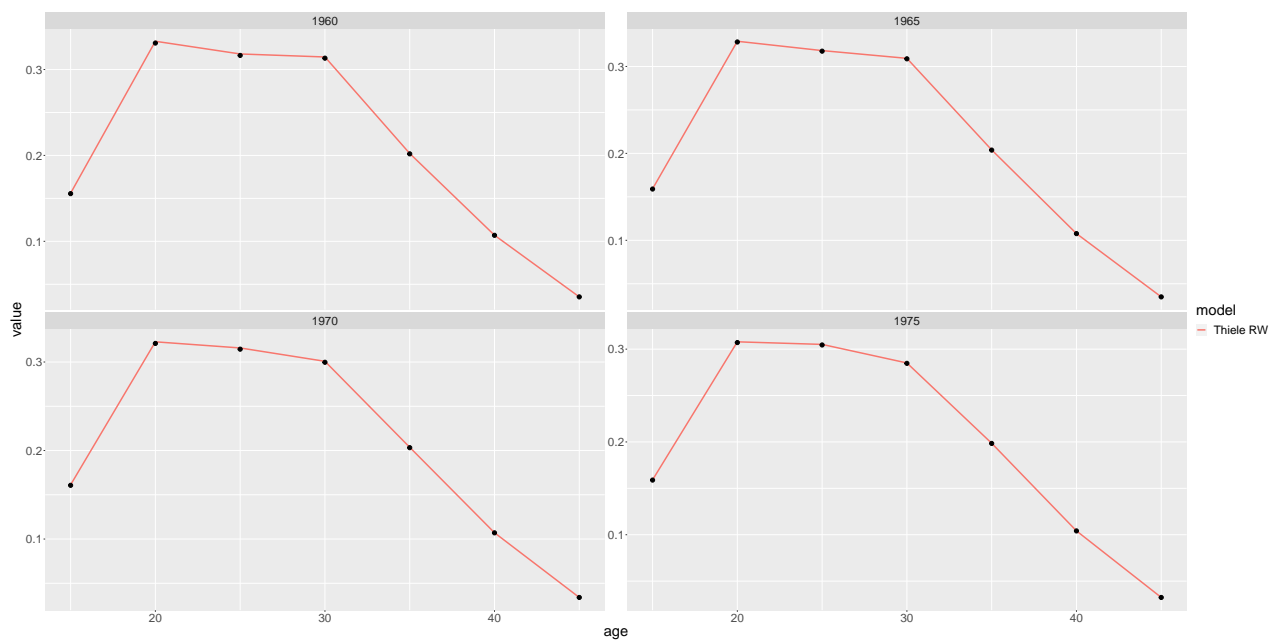Figure 13: Population

Figure 14: Migration



Figure 15: Migration
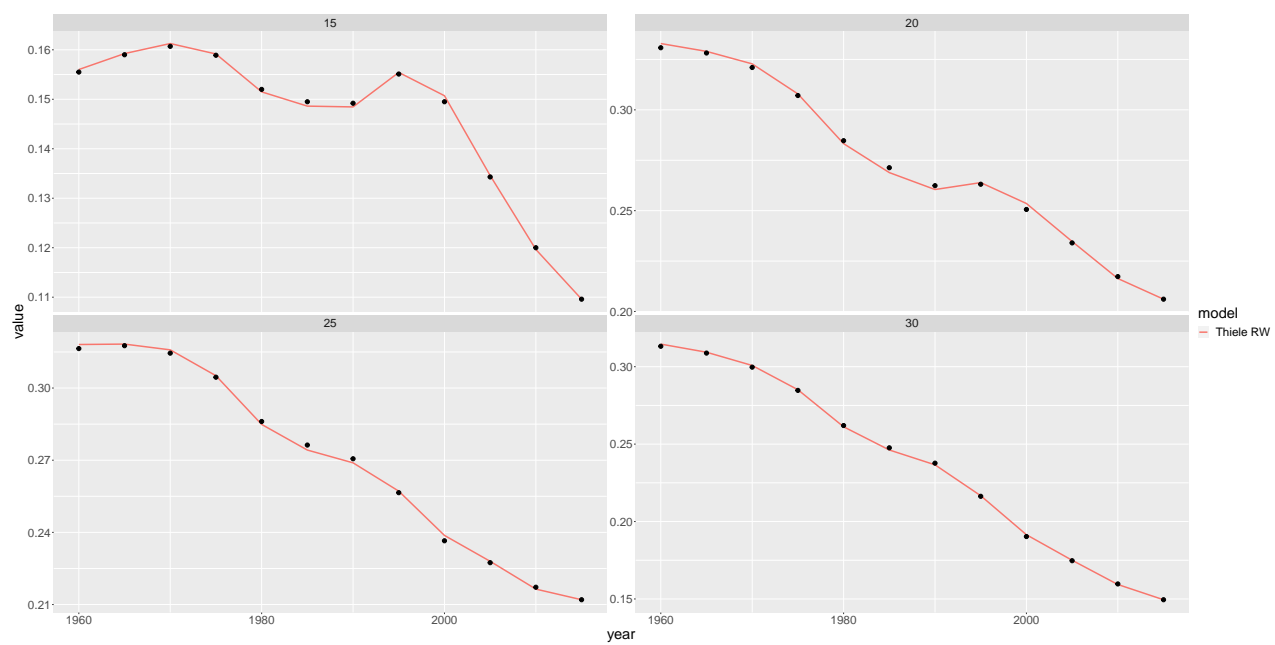
Figure 16: Migration



Figure 17: Fertility

Figure 18: Fertility