Benin

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

## # A tibble: 18 x 4
##    aggr.age  `1979`   `1992`   `2002`
## *     <dbl>   <dbl>    <dbl>    <dbl>
## 1         0 351457.  451209.  581721.
## 2         5 268180.  399795.  528394.
## 3        10 178950.  297938.  424443.
## 4        15 142937.  230898.  345842.
## 5        20 150307.  217909.  319031.
## 6        25 141563.  203308.  287531.
## 7        30 111638.  168389.  232635.
## 8        35  85508.  130473.  181653.
## 9        40  67925.   98650.  140434.
## 10       45  55549.   75216.  106912.
## 11       50  44515.   58443.   80354.
## 12       55  35211.   46576.   61064.
## 13       60  30311.   40848.   52252.
## 14       65  24816.   33119.   43100.
## 15       70  18851.   24260.   32546.
## 16       75  12313.   17574.   24279.
## 17       80  28474.   12703.   17811.
## 18       85      NA   20123.   29599.

## [1] "Census Males"

## # A tibble: 18 x 4
##    aggr.age  `1979`   `1992`   `2002`
## *     <dbl>   <dbl>    <dbl>    <dbl>
## 1         0 351689.  457215.  593589.
## 2         5 288221.  425746.  552851.
## 3        10 196031.  322971.  447134.
## 4        15 126149.  224359.  331492.
## 5        20 101019.  175298.  259297.
## 6        25  92613.  152515.  223049.
## 7        30  81036.  132135.  192641.
## 8        35  67610.  108568.  158344.
## 9        40  56596.   85645.  125995.
## 10       45  48757.   66981.   99224.
## 11       50  41032.   52336.   75992.
## 12       55  33835.   41489.   56863.
## 13       60  29670.   35493.   45486.
## 14       65  25324.   29766.   35834.
## 15       70  20368.   23877.   27073.
## 16       75  13851.   17867.   20036.
## 17       80  31178.   12656.   14361.
## 18       85      NA   21785.   25804.
```

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
##     2.48    0.20    2.69
```
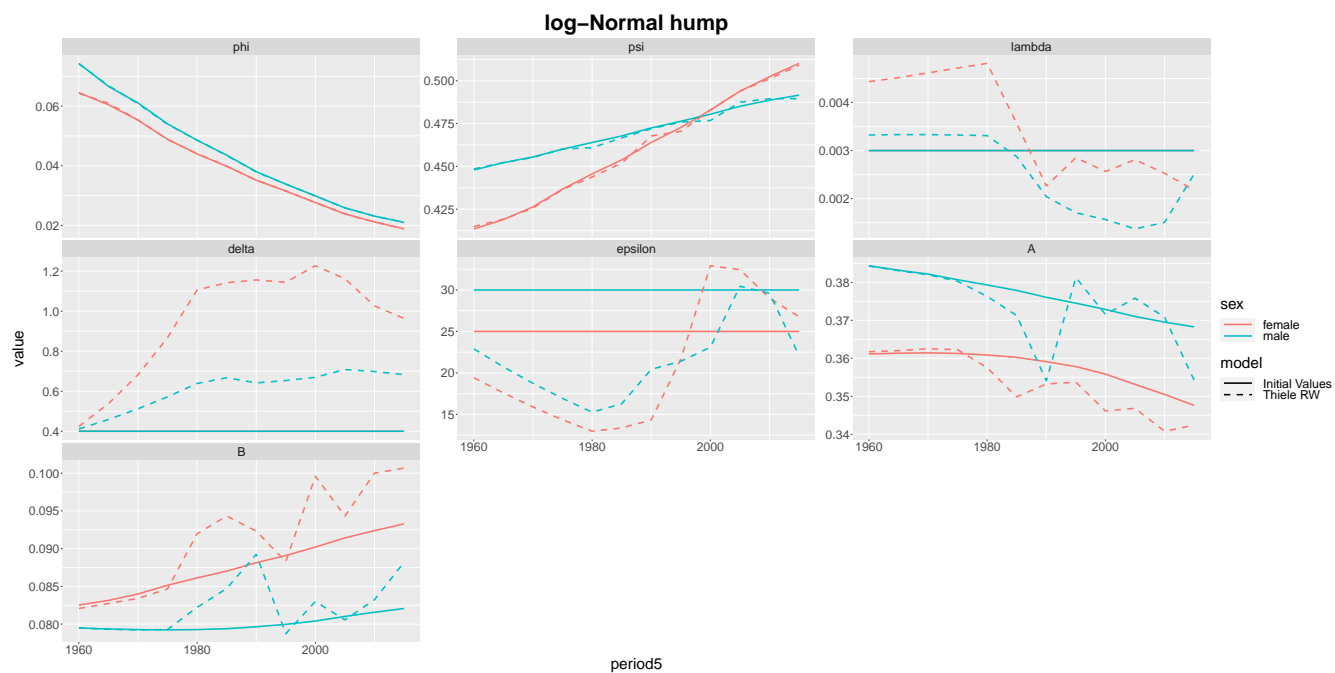
```
## [1] "false convergence (8)"
```
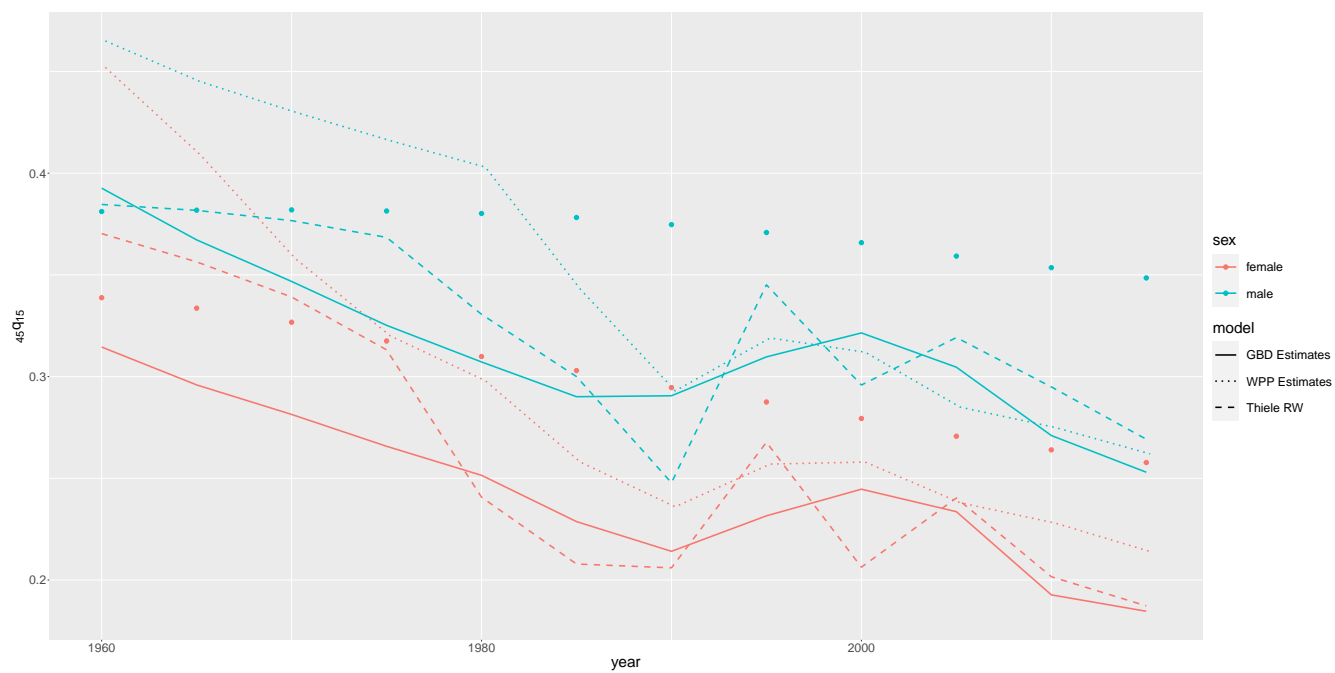
Figure 1: Estimated parameters

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

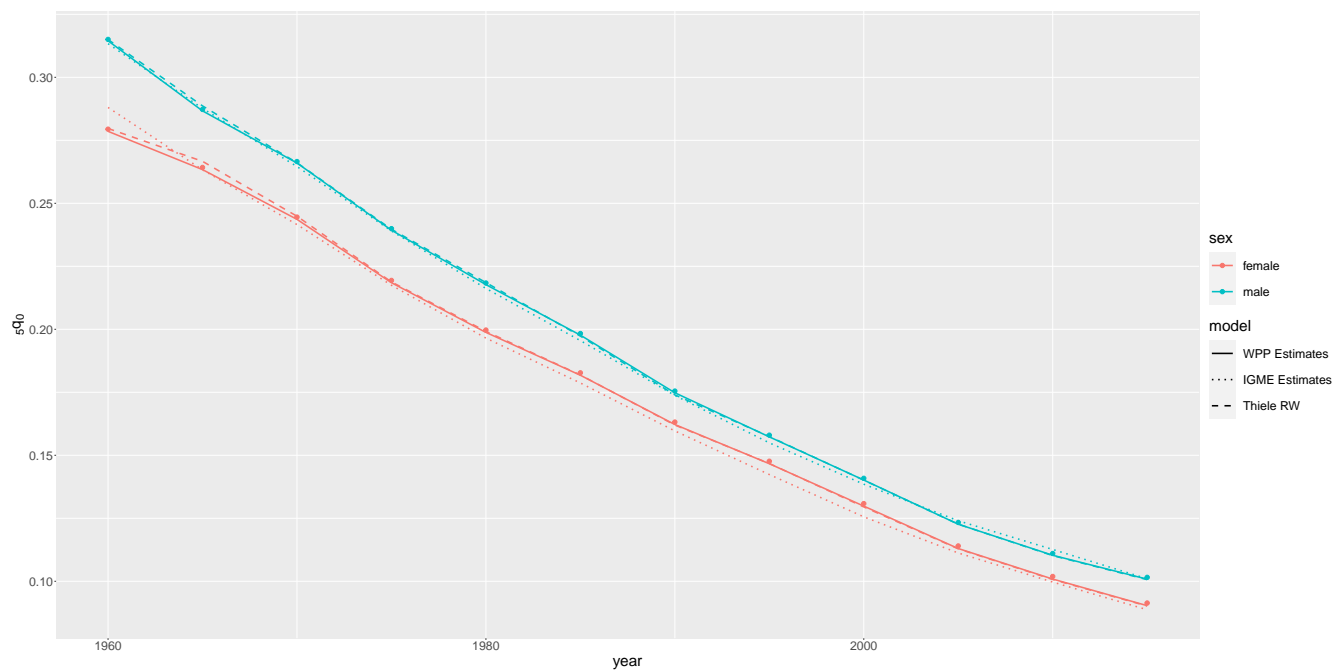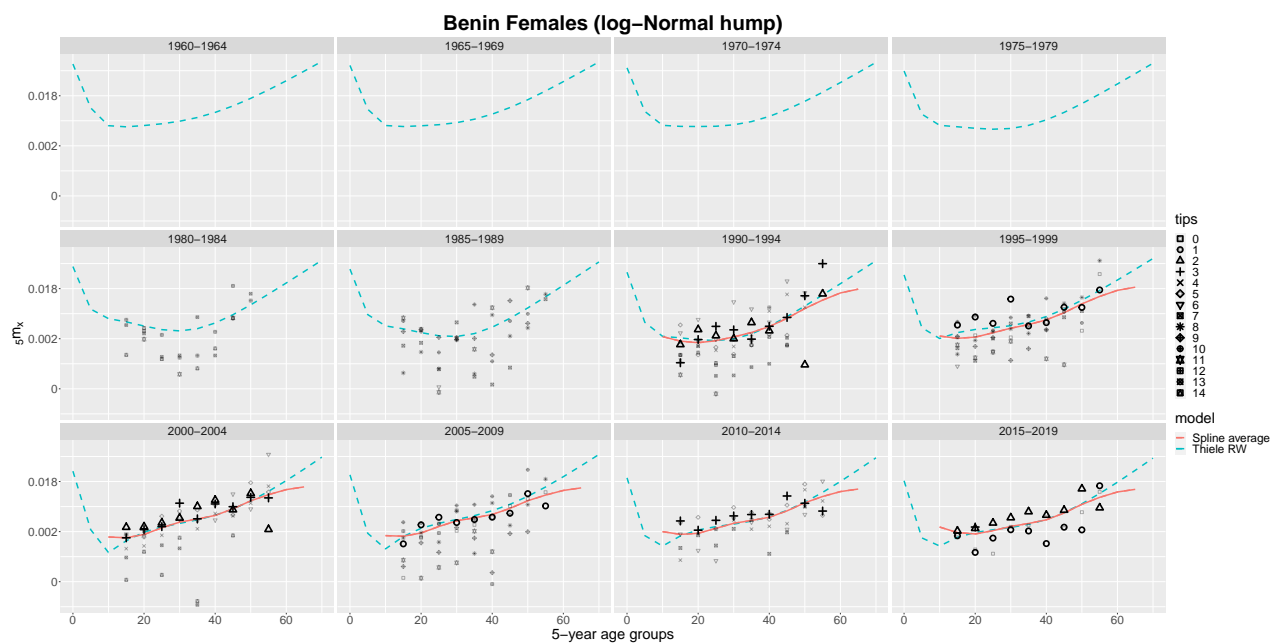Figure 3: Estimated $_5q_0$

Figure 4: Mortality Schedules

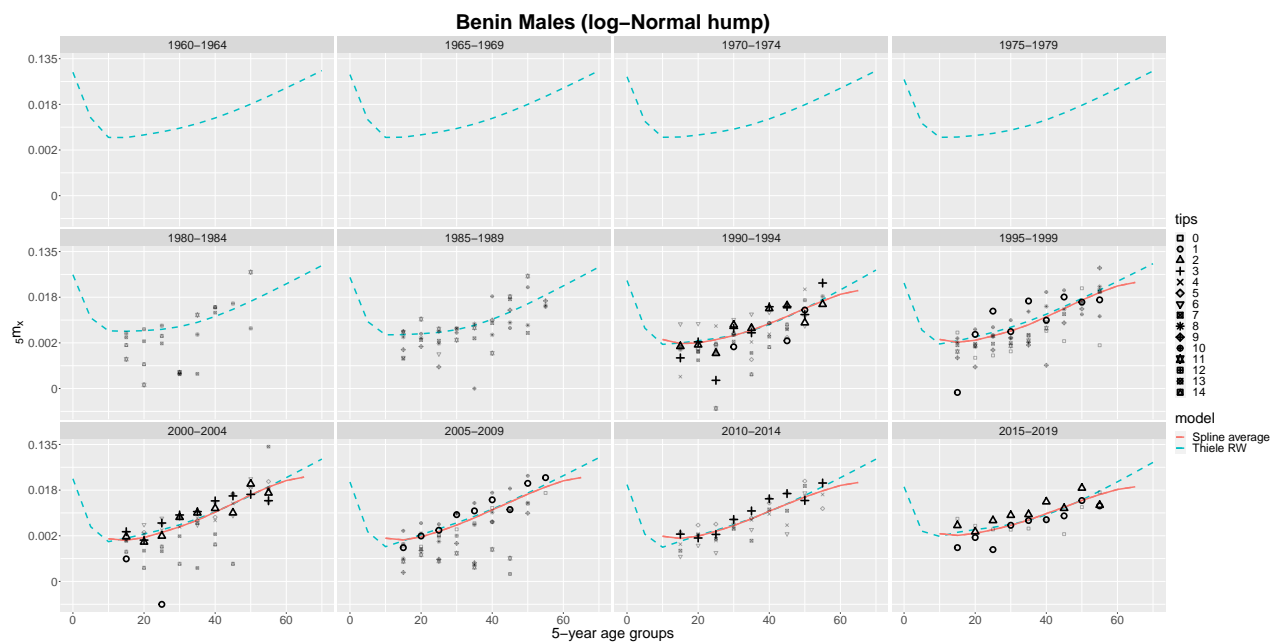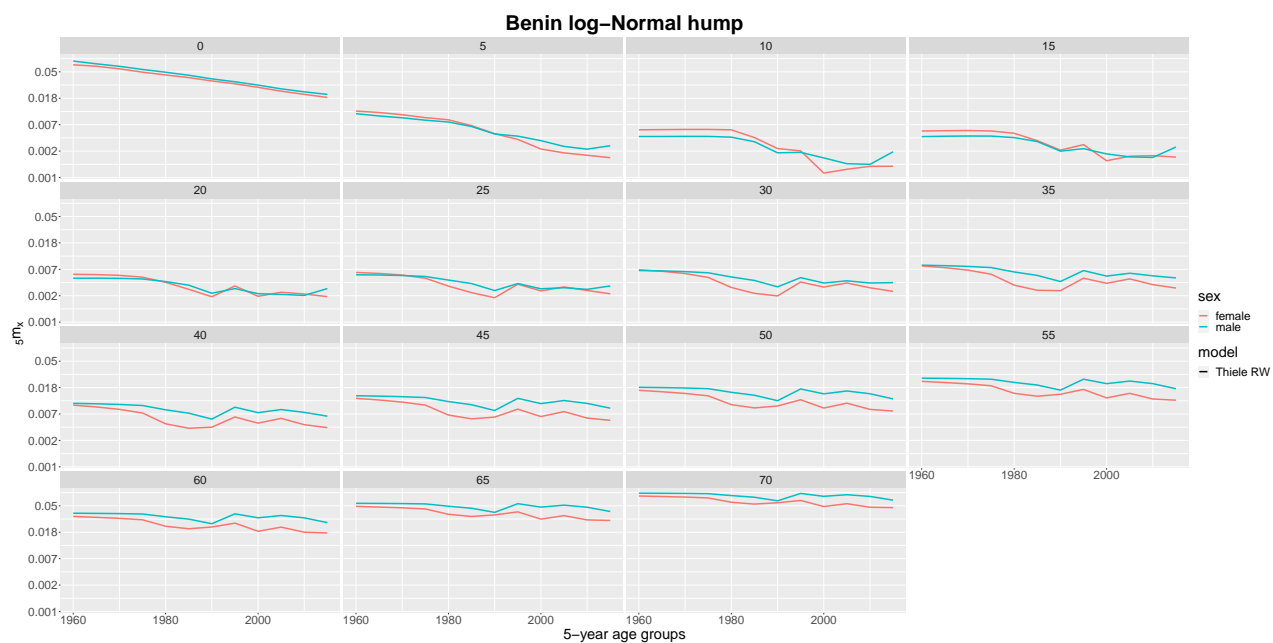
Figure 5: Mortality Schedules
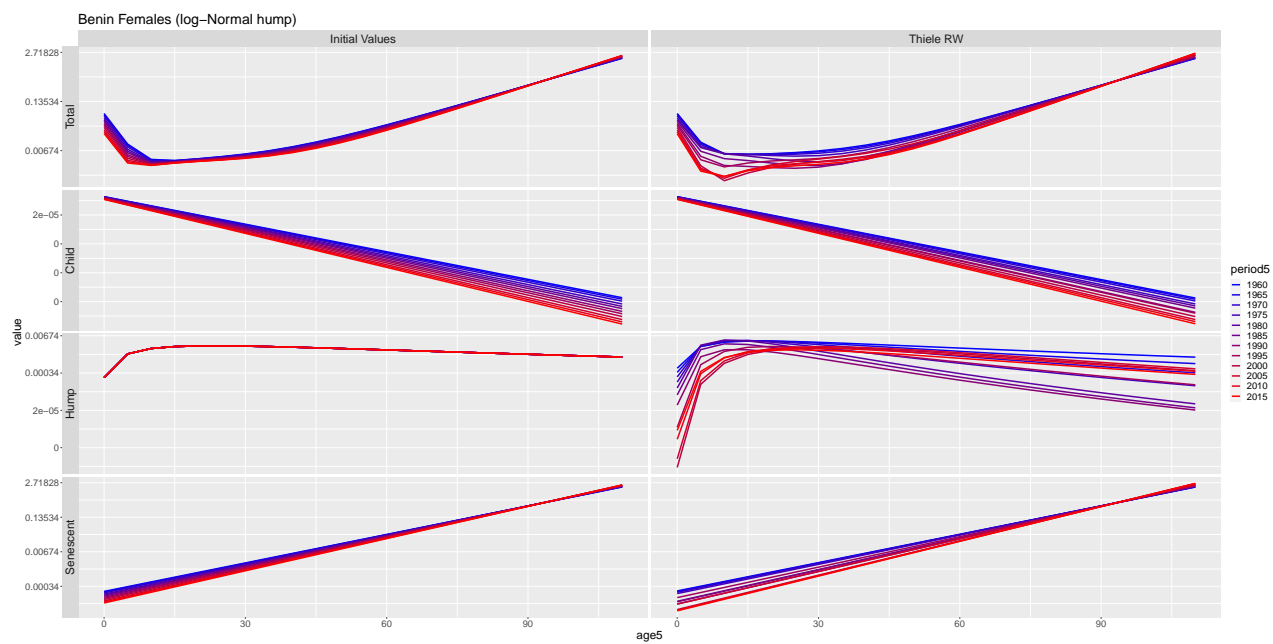
Figure 6: Mortality Schedules
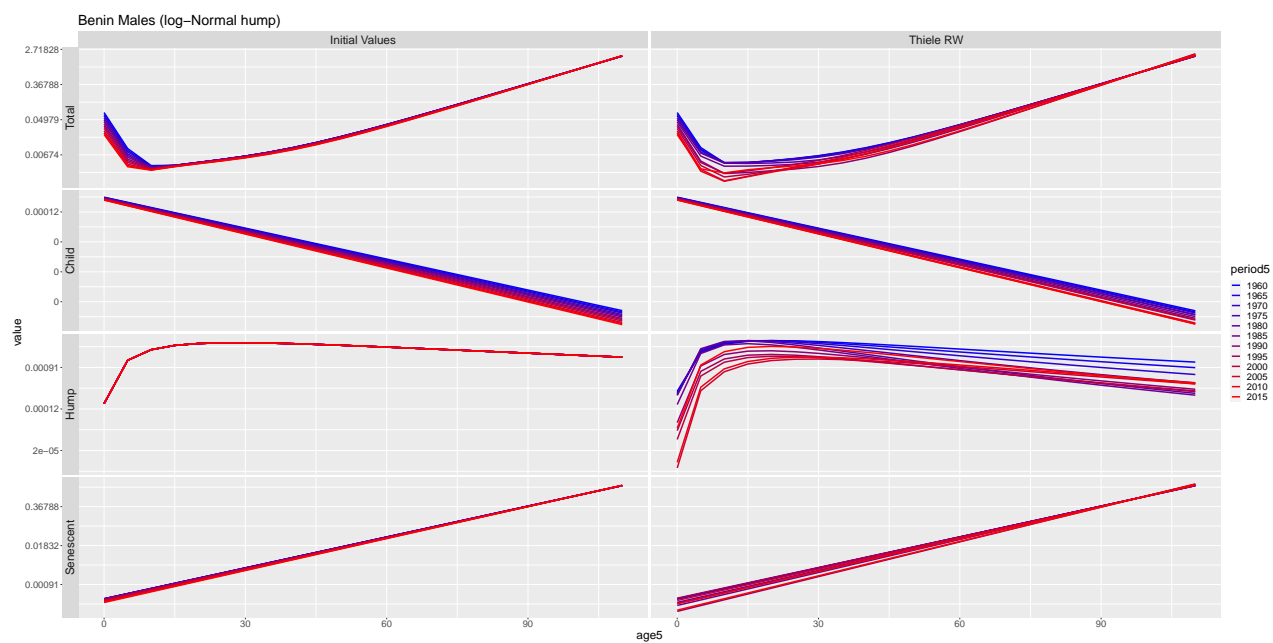

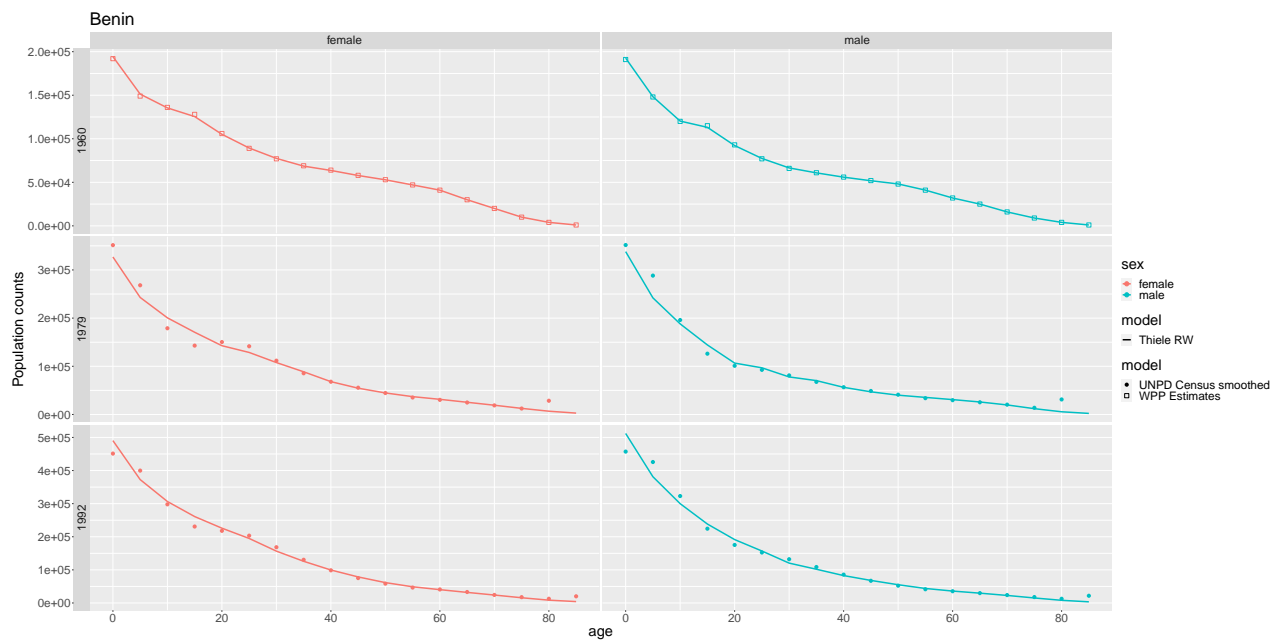Figure 7: Thiele Decomposed

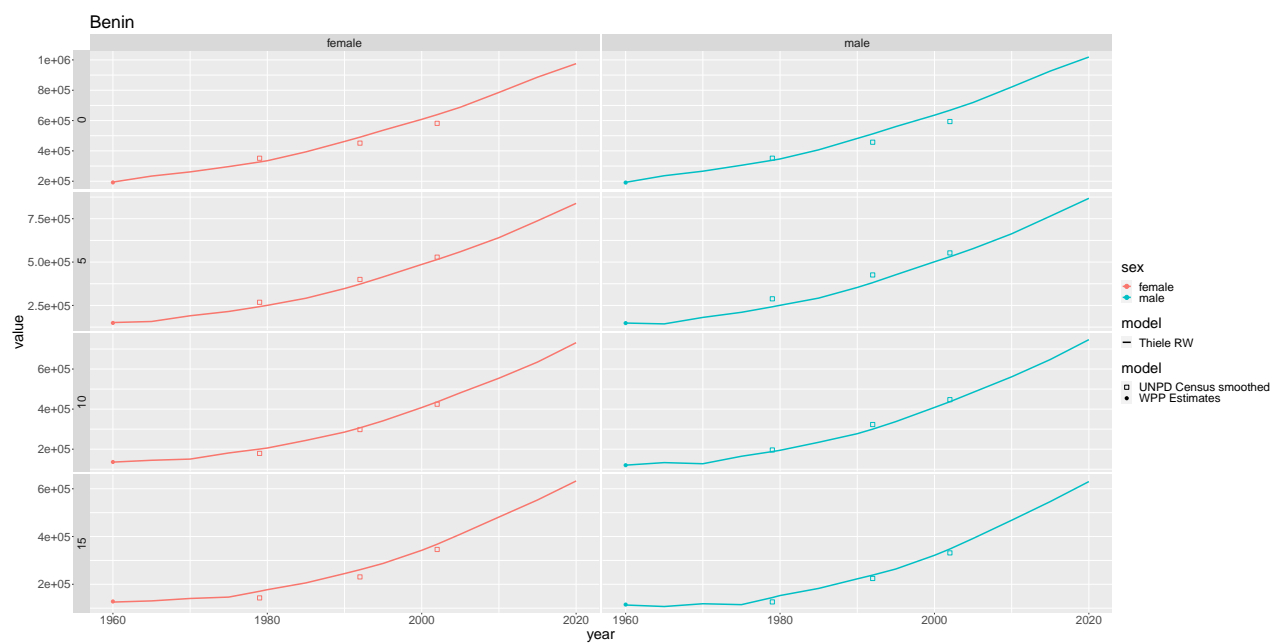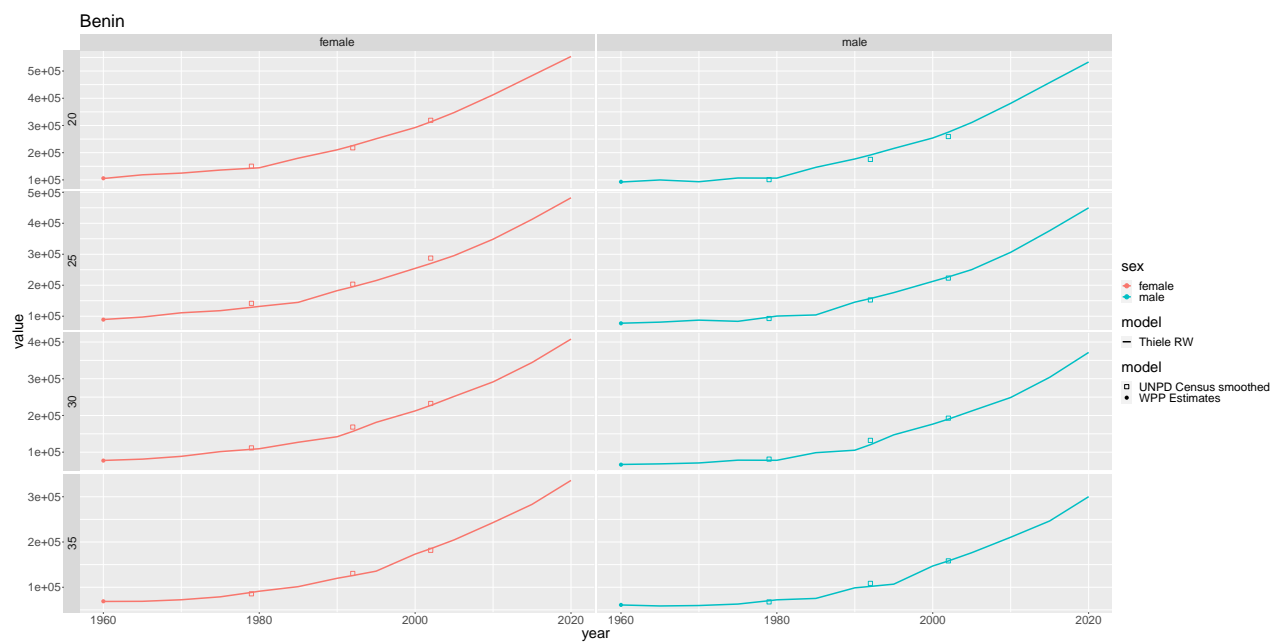Figure 8: Thiele Decomposed

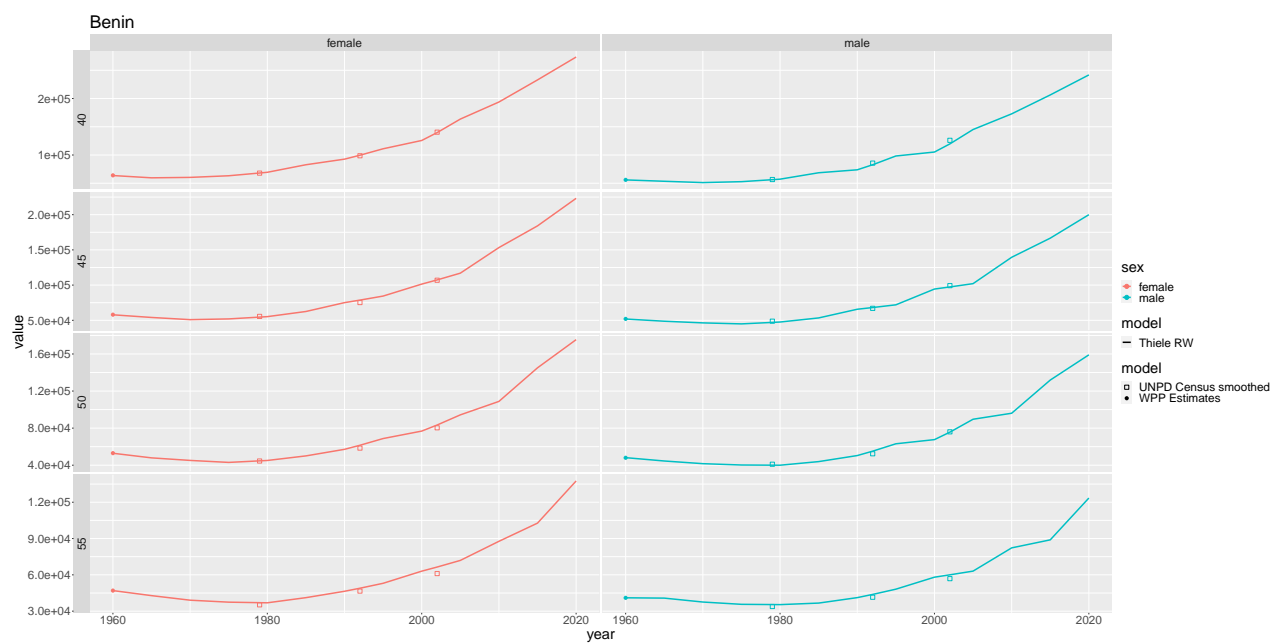Figure 9: Population

Figure 10: Population

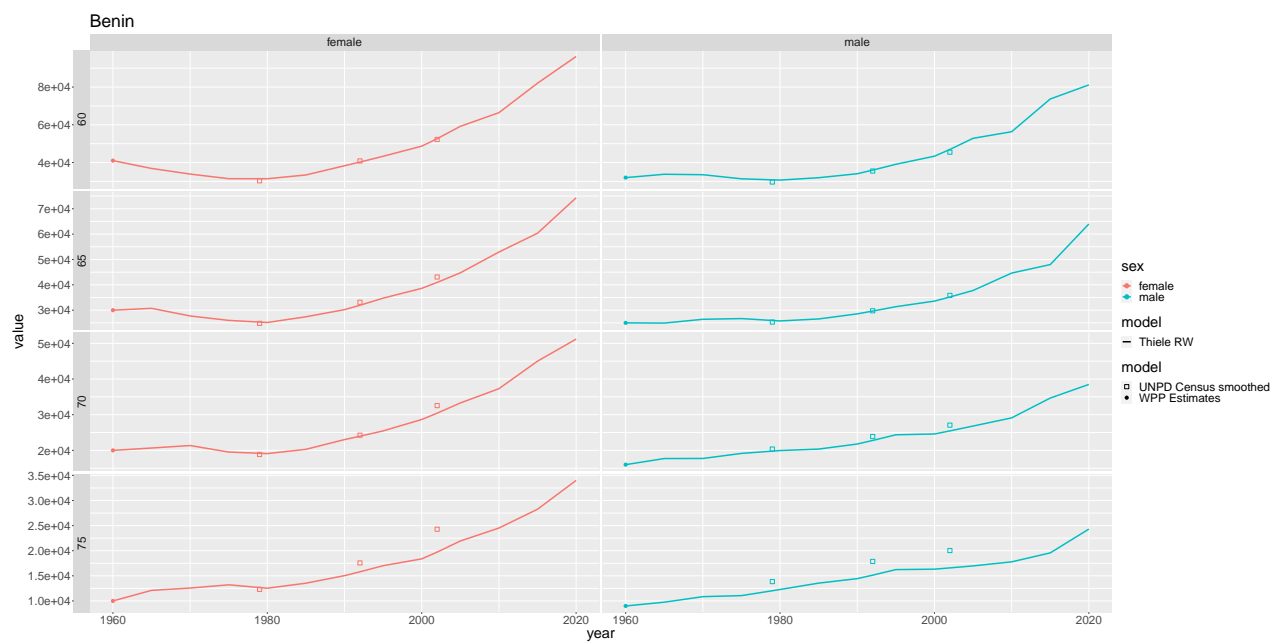Figure 11: Population
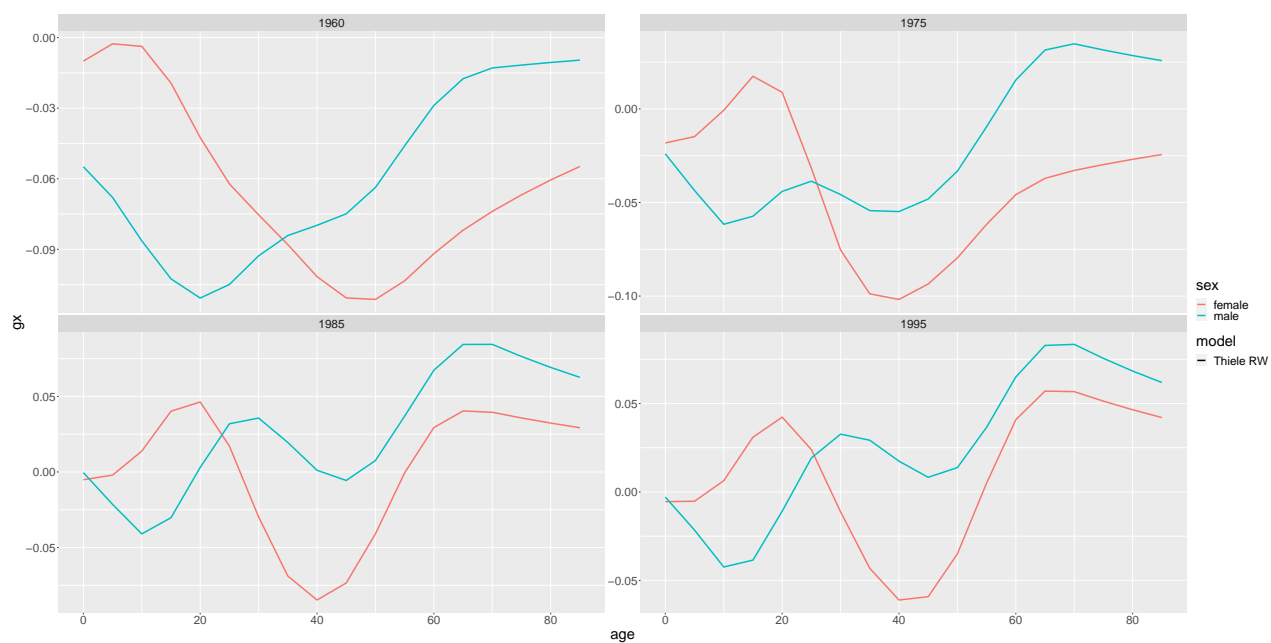
8

Figure 12: Population

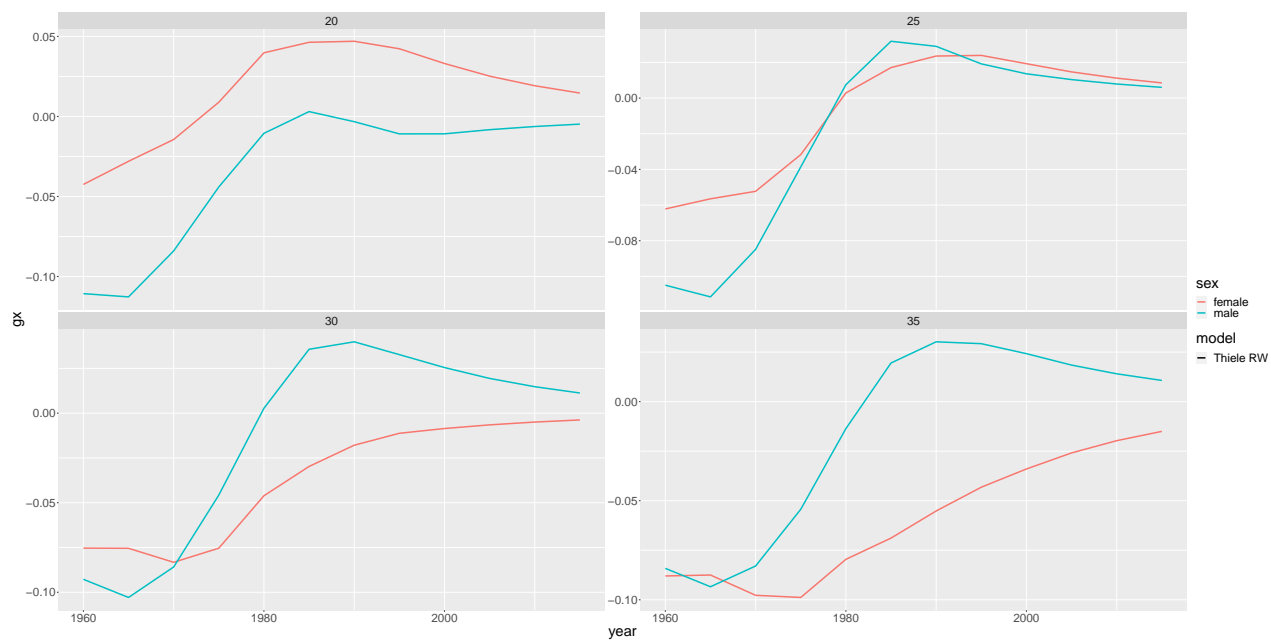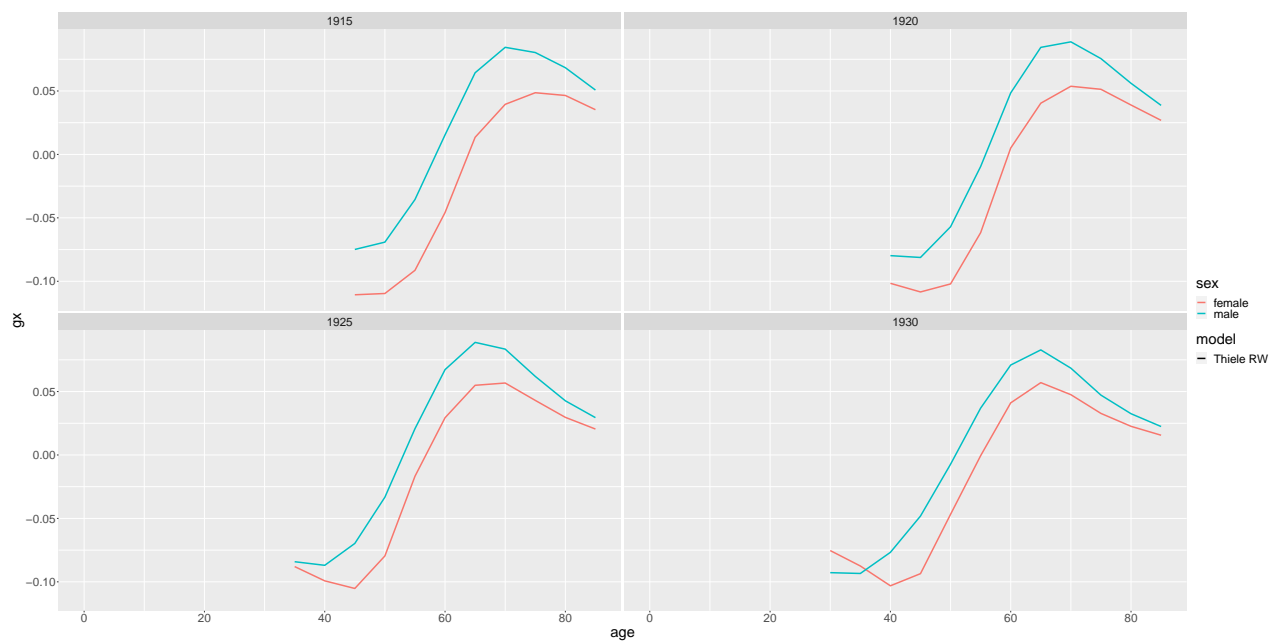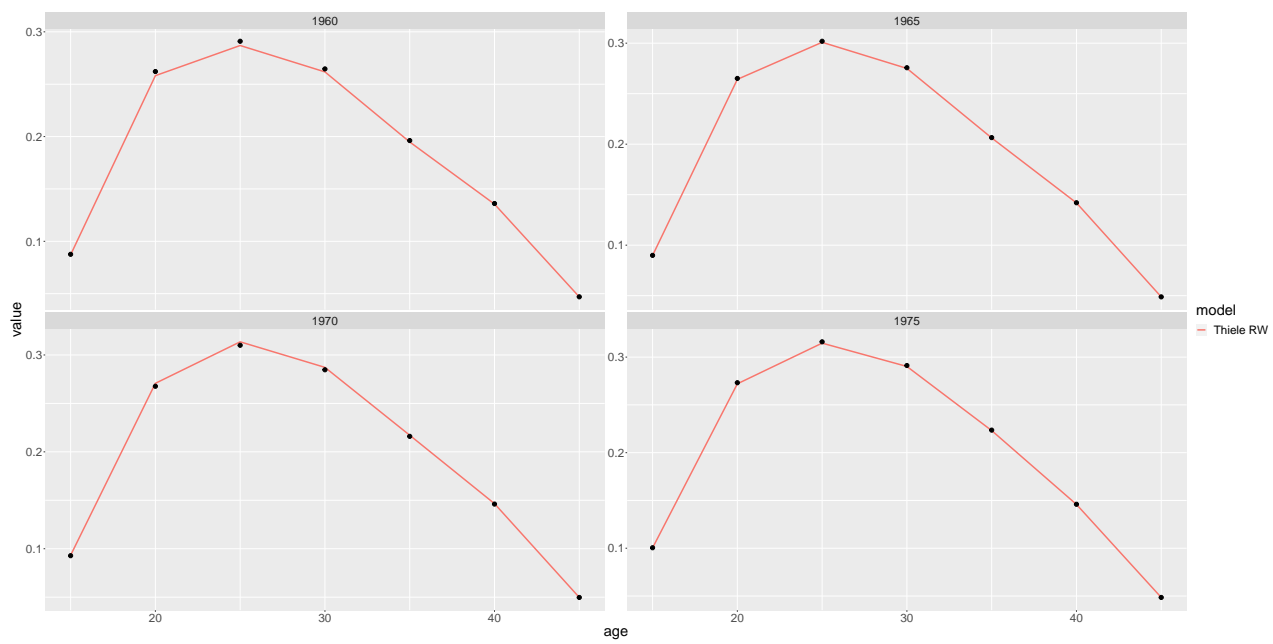Figure 13: Population

Figure 14: Migration

Figure 15: Migration
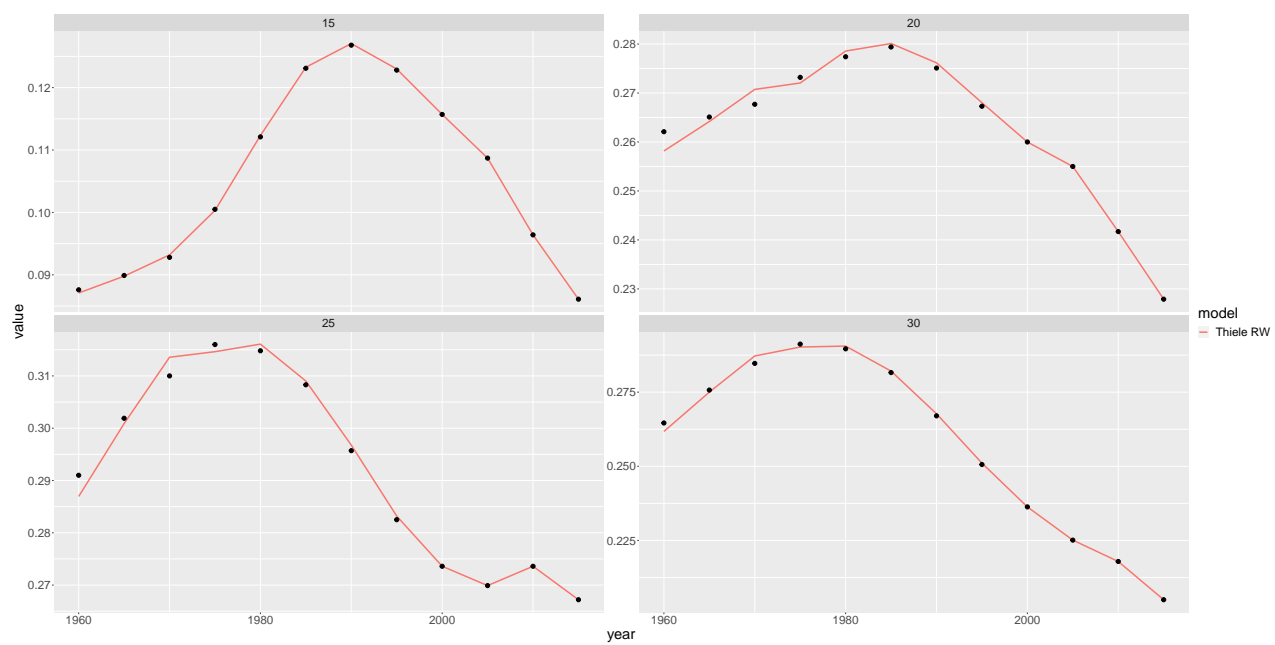
Figure 16: Migration

Figure 17: Fertility

Figure 18: Fertility