Zimbabwe

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

## # A tibble: 18 x 6
##    aggr.age  `1969`   `1982`   `1992`   `2002`   `2012`
##   *   <dbl>   <dbl>    <dbl>    <dbl>    <dbl>    <dbl>
## 1         0  1100.  666513.  798430.  841551.  994095.
## 2         5  1252.  606731.  800838.  786853.  888042.
## 3        10  1181.  518252.  734654.  766089.  816383.
## 4        15   935.  427787.  632121.  740696.  732628.
## 5        20   709.  356139.  515526.  652354.  658733.
## 6        25   541.  283765.  401947.  513851.  589595.
## 7        30   437.  216565.  323256.  377382.  486213.
## 8        35   379.  171958.  259608.  285606.  371333.
## 9        40   303.  140150.  196167.  235848.  269013.
## 10       45   227.  112995.  156462.  199664.  210869.
## 11       50   168.   88392.  131658.  163218.  193389.
## 12       55   124.   69556.  101596.  124937.  166578.
## 13       60   95.4   57646.   76774.   95198.  129163.
## 14       65   67.1   43446.   62335.   74711.   98600.
## 15       70   35.5   30553.   62691.   57053.   73611.
## 16       75   17.0   46842.   68635.   41096.   53541.
## 17       80   9.26      NA       NA    27715.   37440.
## 18       85   13.4      NA       NA    29432.   44517.

## [1] "Census Males"

## # A tibble: 18 x 6
##    aggr.age  `1969`   `1982`   `1992`   `2002`   `2012`
##   *   <dbl>   <dbl>    <dbl>    <dbl>    <dbl>    <dbl>
## 1         0  1156.  644716.  791447.  840935.  988570.
## 2         5  1278.  600942.  791611.  783064.  883312.
## 3        10  1207.  516716.  723986.  755159.  812432.
## 4        15   931.  400975.  607706.  700391.  699246.
## 5        20   636.  304239.  472762.  586689.  577653.
## 6        25   459.  241174.  355698.  472073.  507682.
## 7        30   389.  190946.  282187.  363579.  443238.
## 8        35   341.  156158.  228982.  259868.  359967.
## 9        40   280.  137423.  181401.  198311.  265699.
## 10       45   229.  121965.  150071.  163962.  182884.
## 11       50   186.  102082.  127067.  130424.  140339.
## 12       55   142.   81032.  104878.  105187.  119597.
## 13       60   97.1   65118.   84499.   88204.   97041.
## 14       65   60.0   46169.   64250.   71083.   76432.
## 15       70   32.4   29874.   58462.   53914.   59566.
## 16       75   15.2   39495.   52190.   36893.   43527.
## 17       80   8.24      NA       NA    22891.   28936.
## 18       85   7.21      NA       NA    19019.   28690.
```

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
##    7.83    0.24    8.09
```
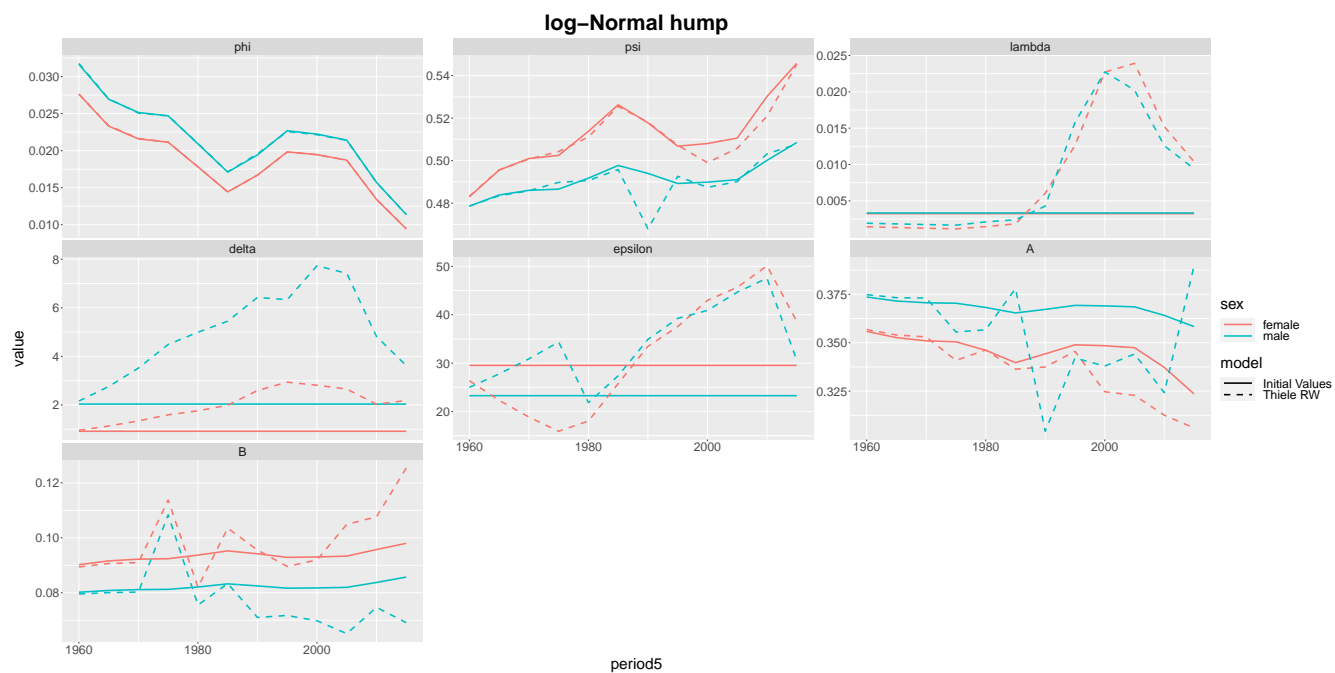
```
## [1] "false convergence (8)"
```
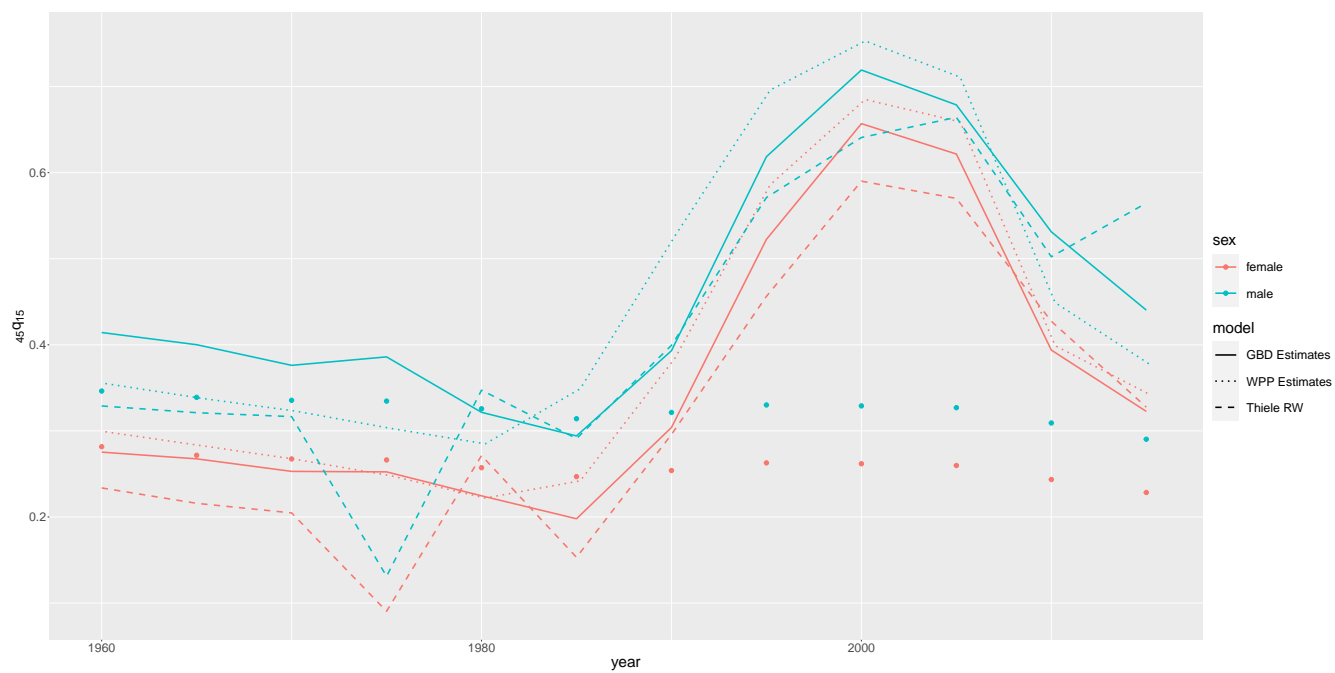
Figure 1: Estimated parameters

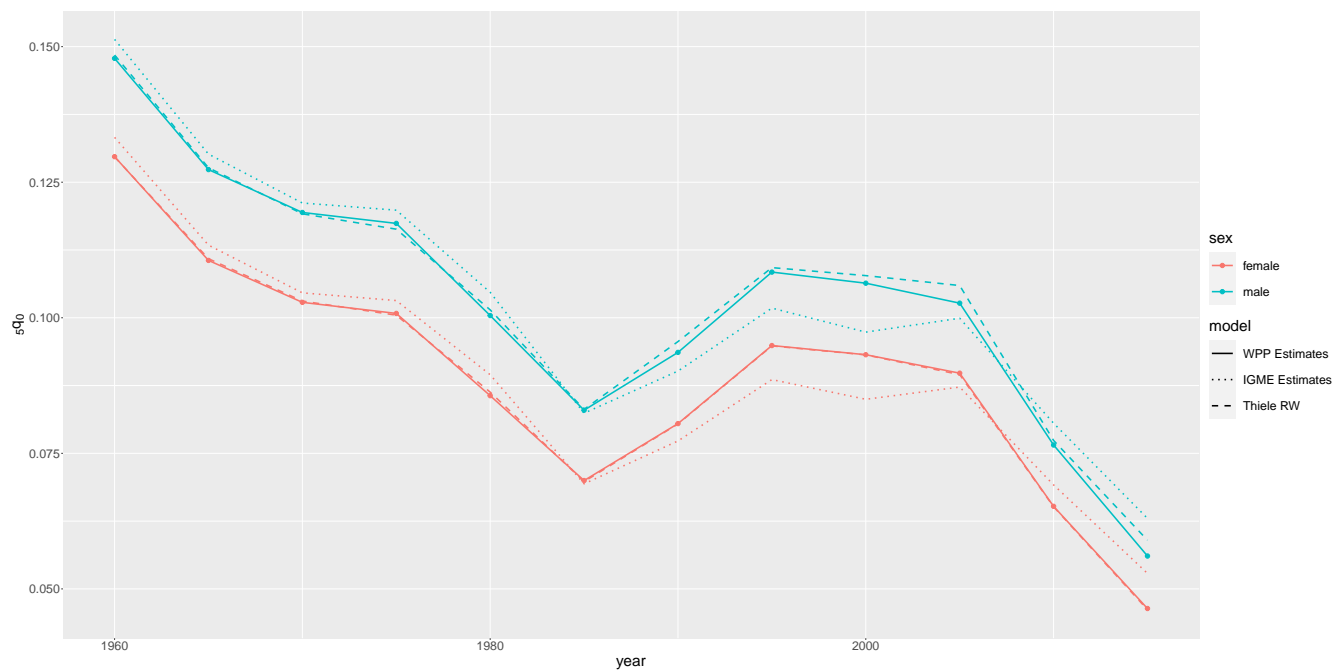Figure 2: Estimated $_{45}q_{15}$

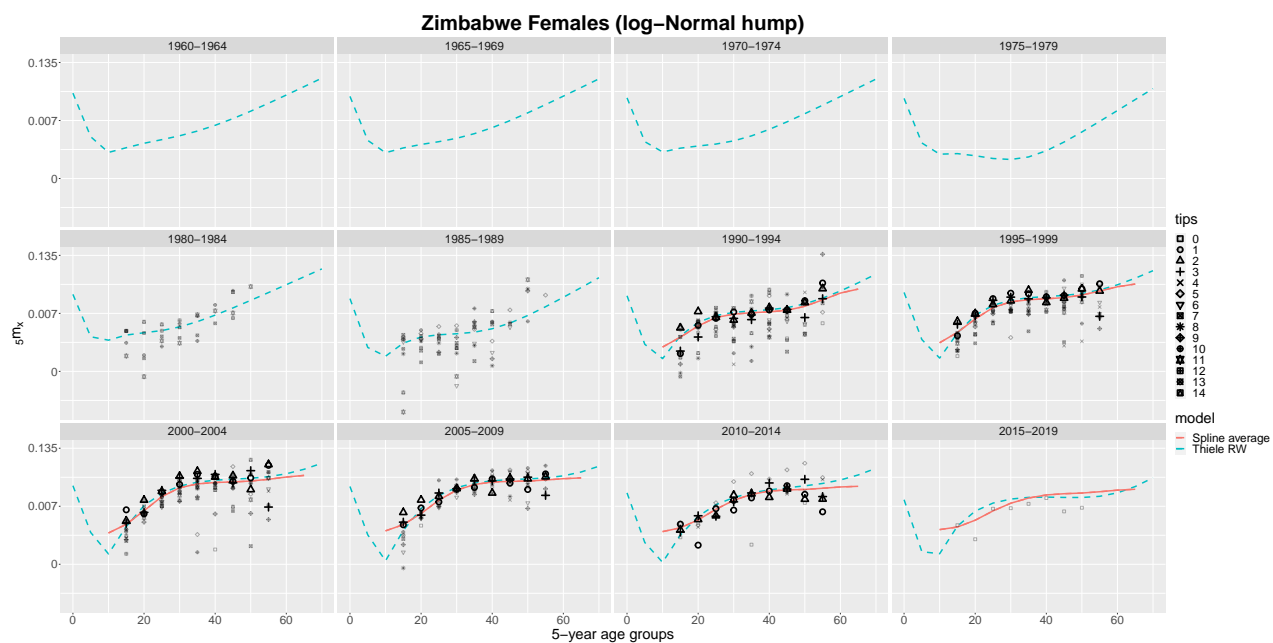Figure 3: Estimated $_{5}q_{0}$

Figure 4: Mortality Schedules

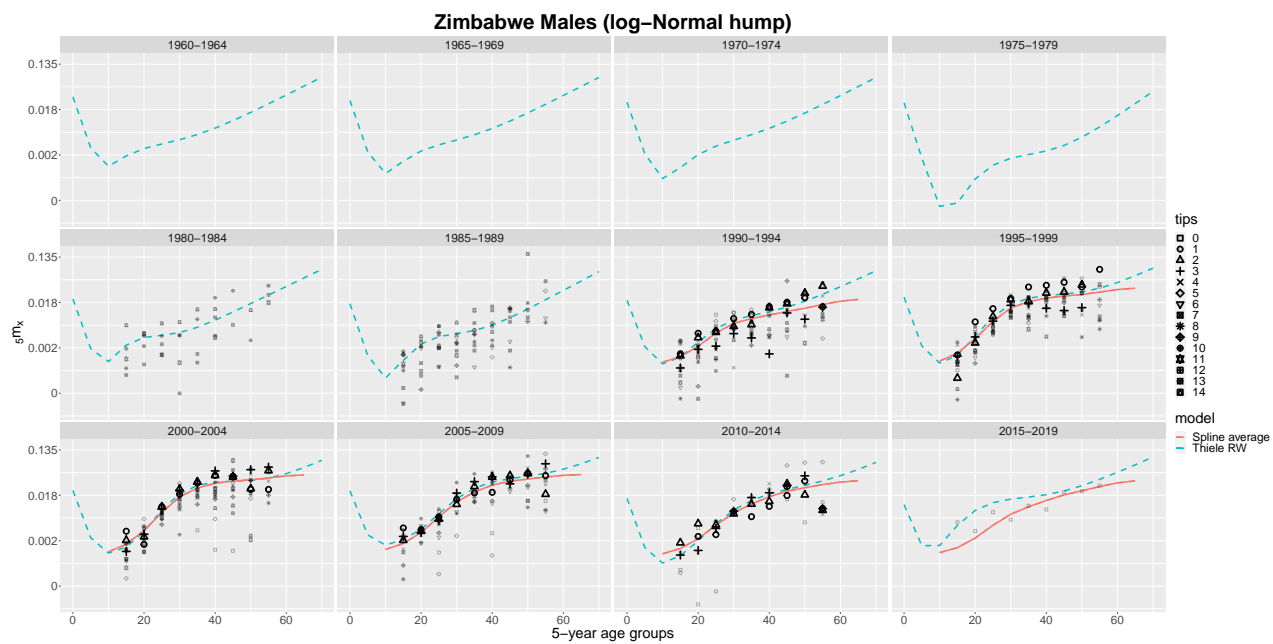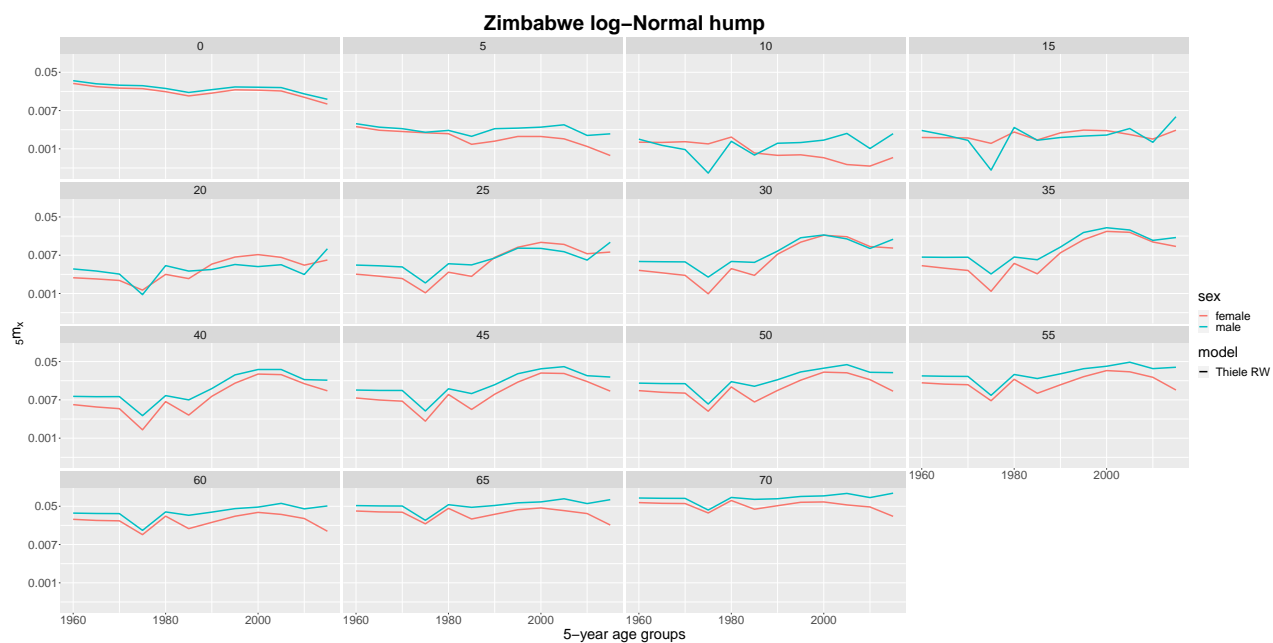Figure 5: Mortality Schedules
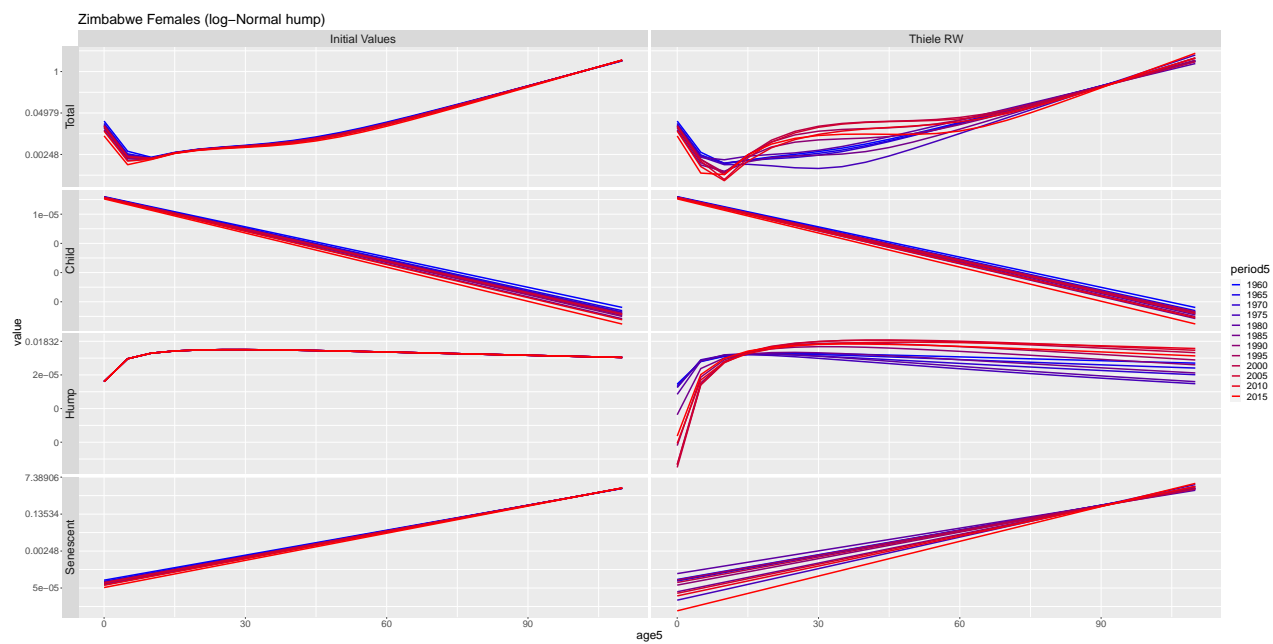
5

Figure 6: Mortality Schedules
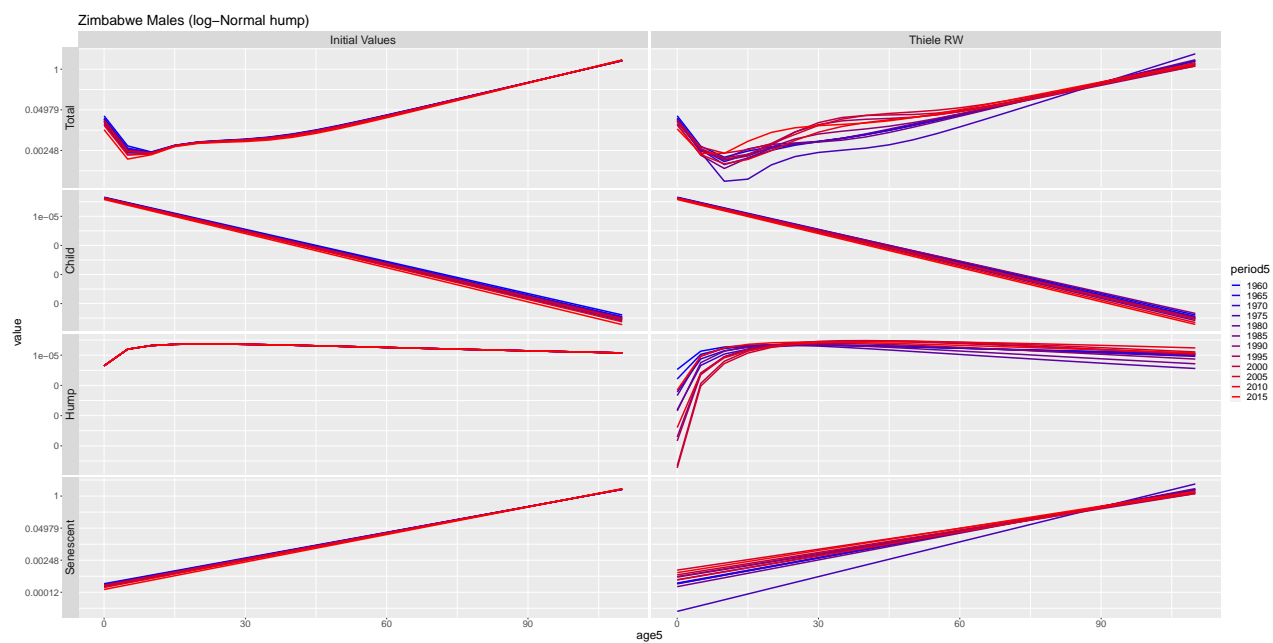

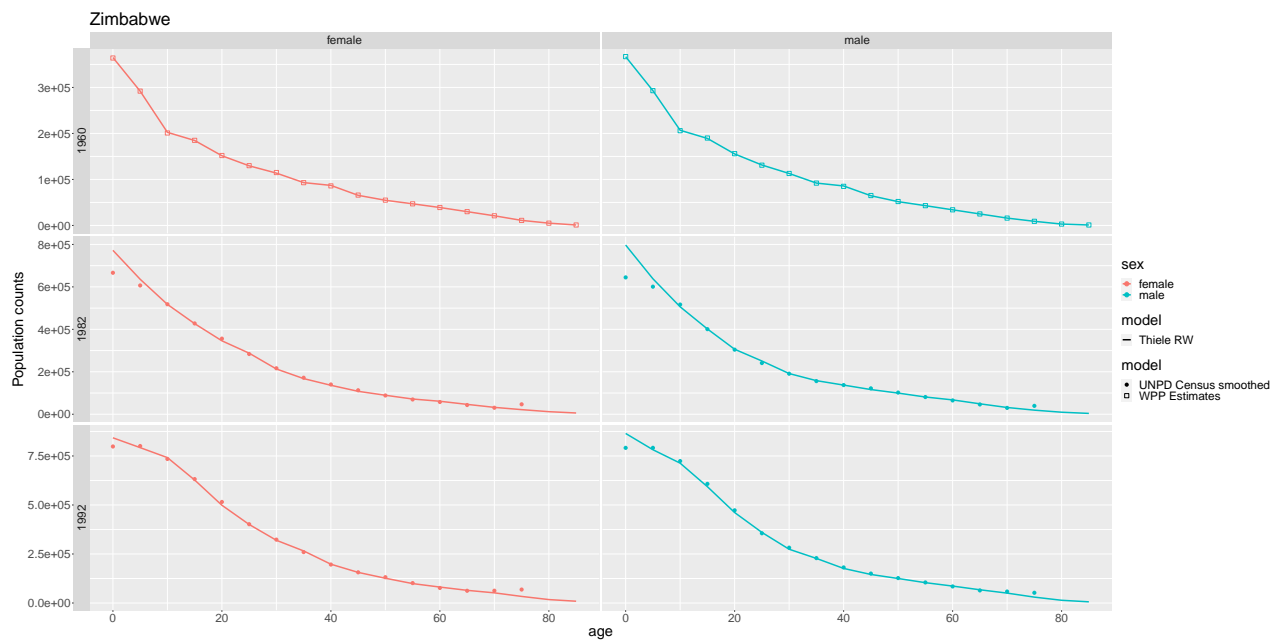Figure 7: Thiele Decomposed

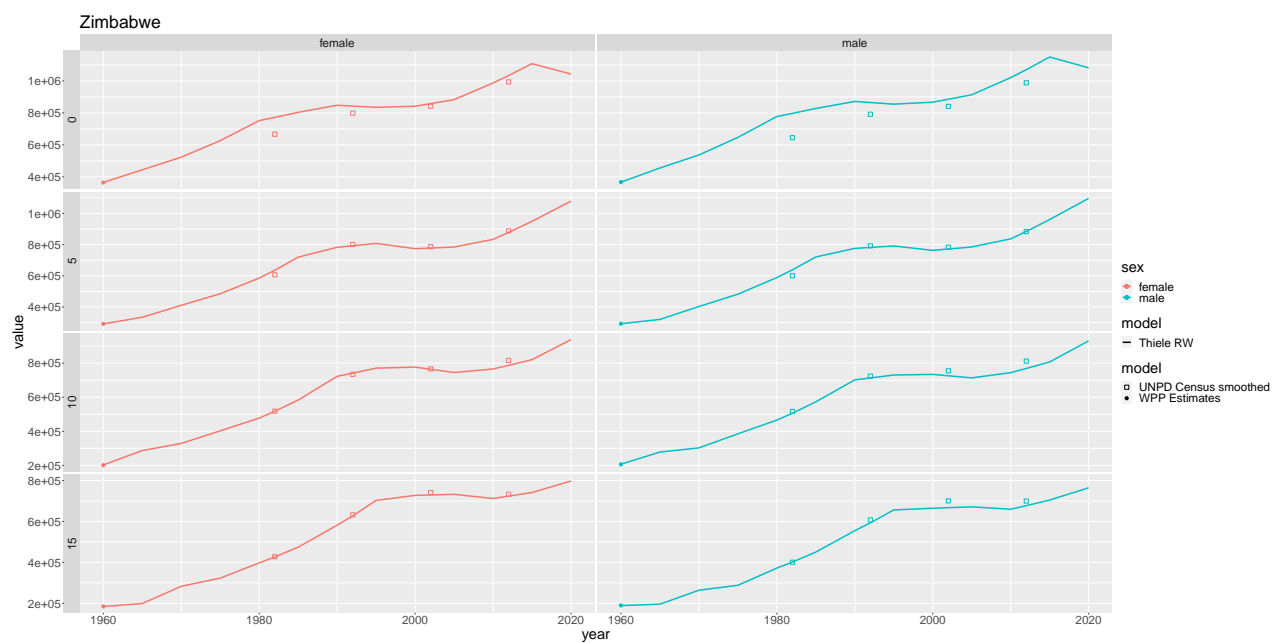Figure 8: Thiele Decomposed

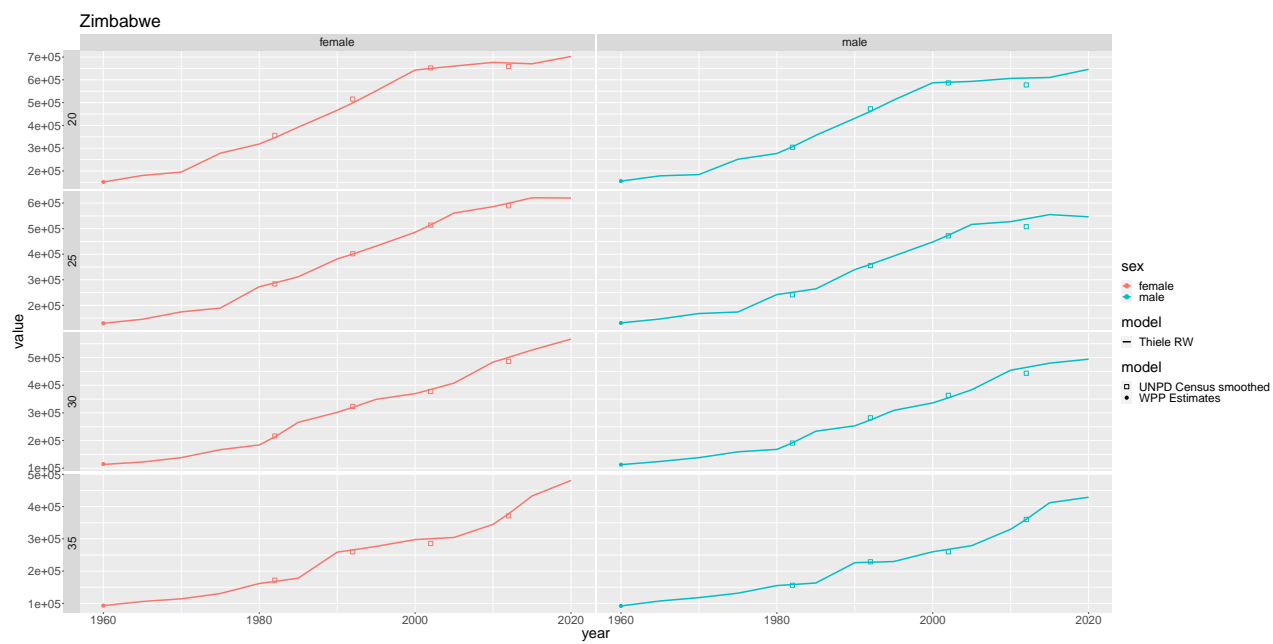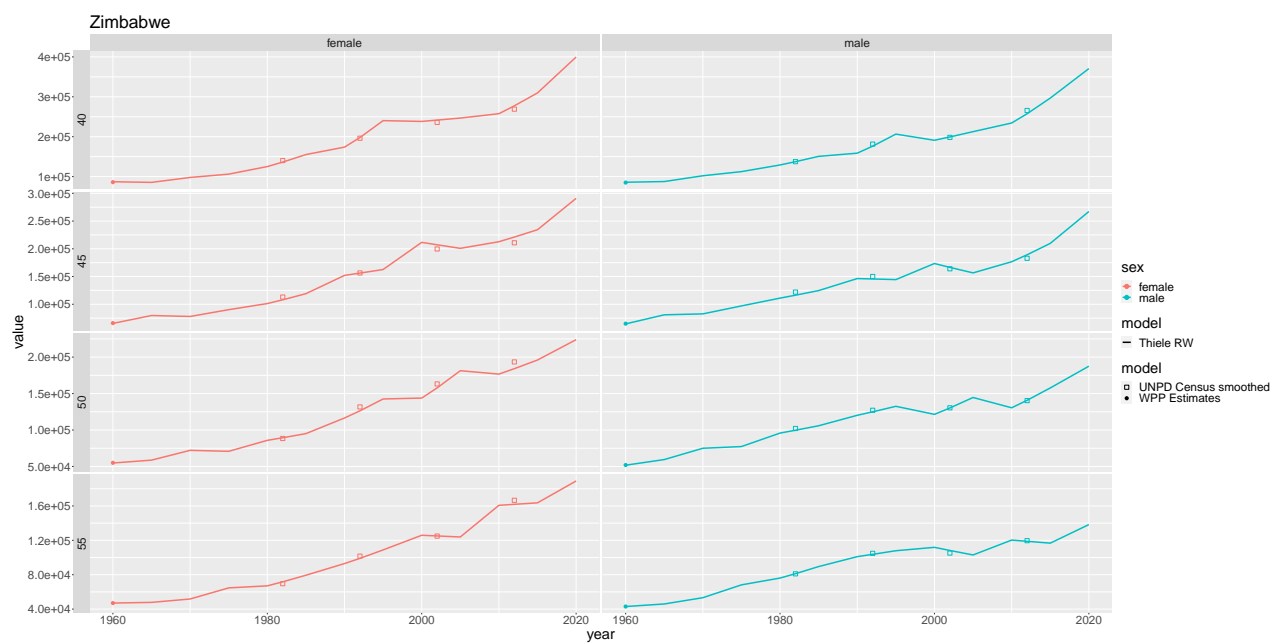Figure 9: Population

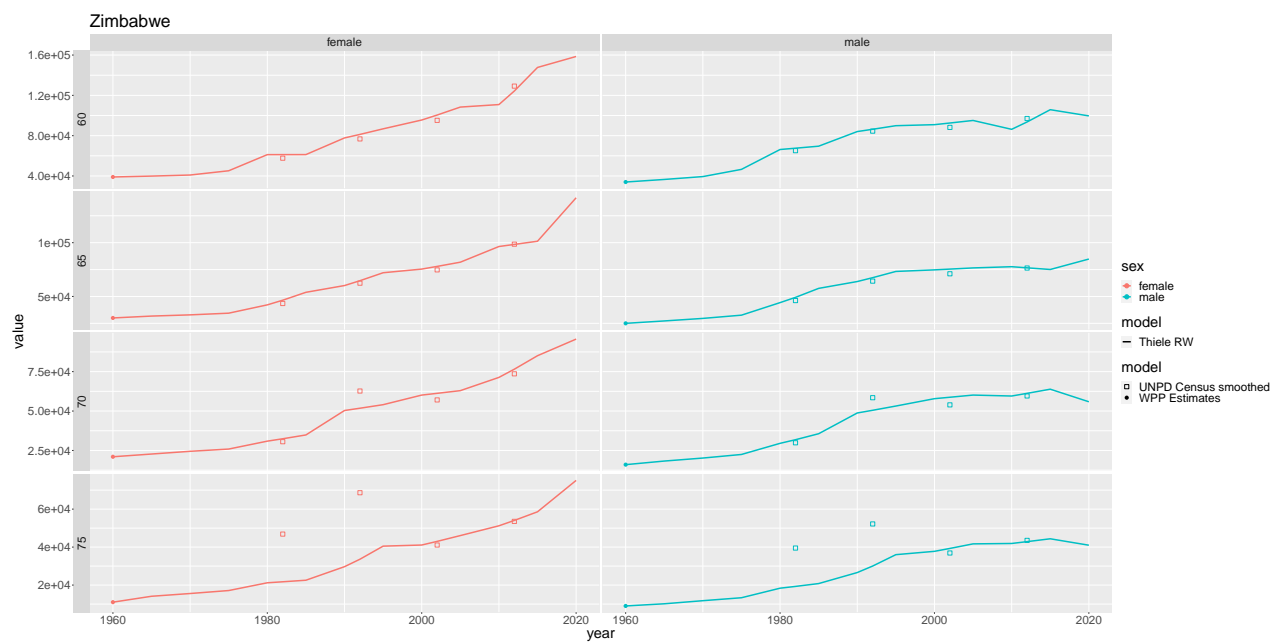Figure 10: Population

Figure 11: Population
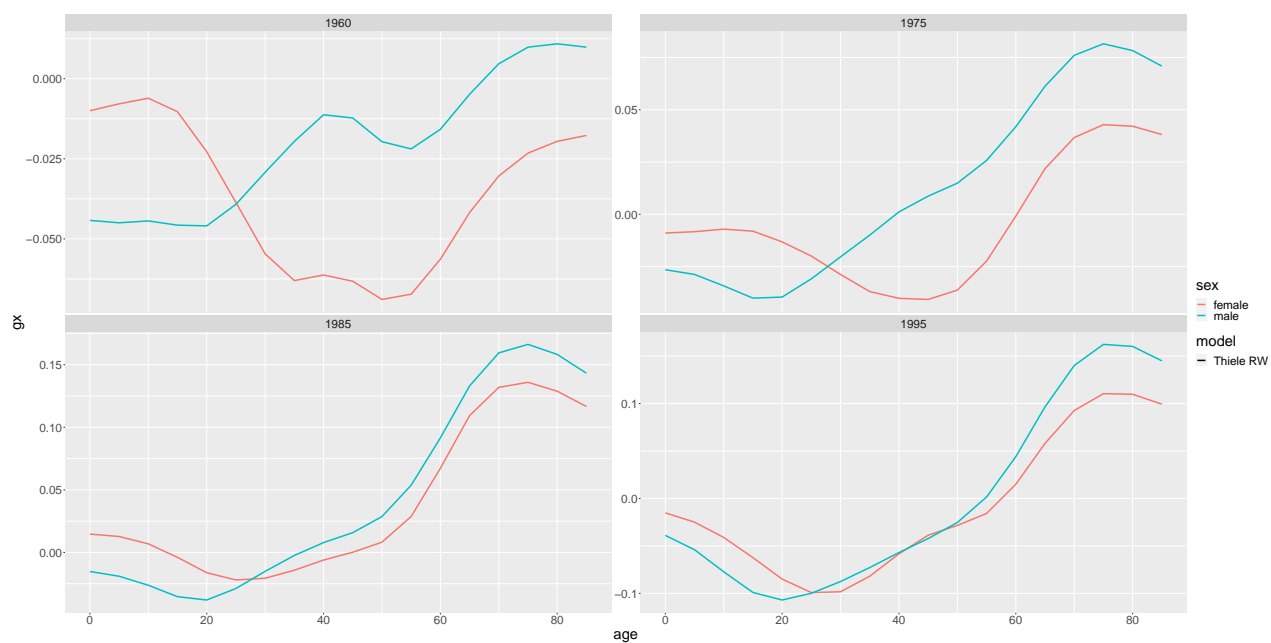
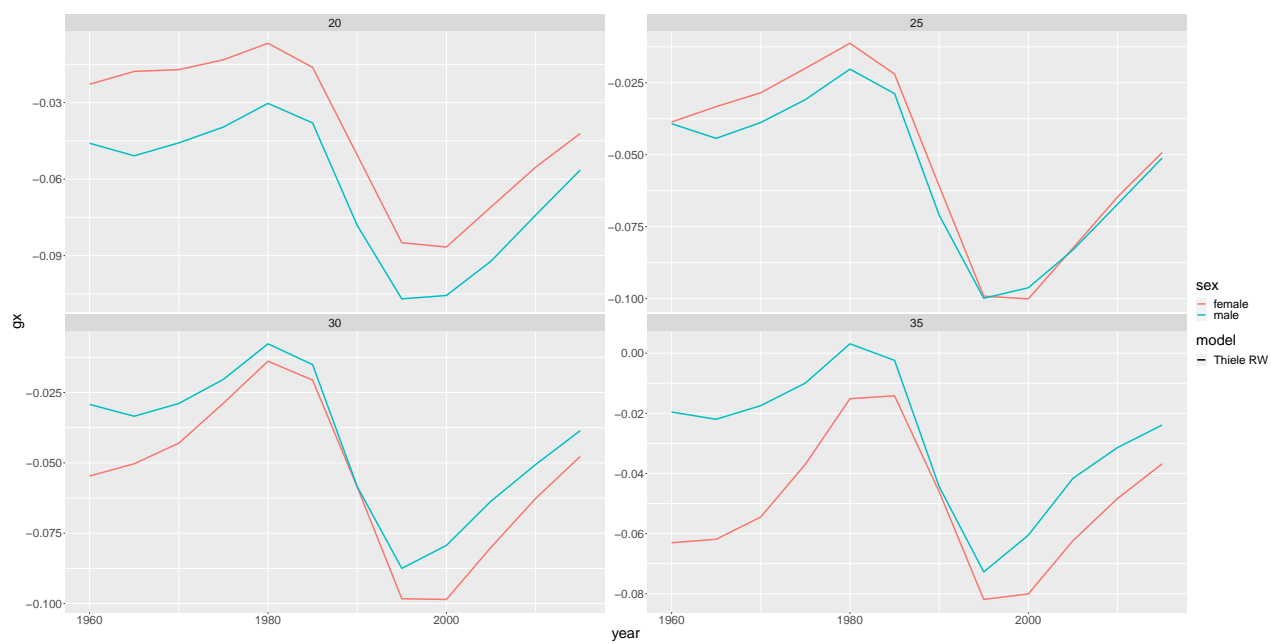Figure 12: Population

Figure 13: Population
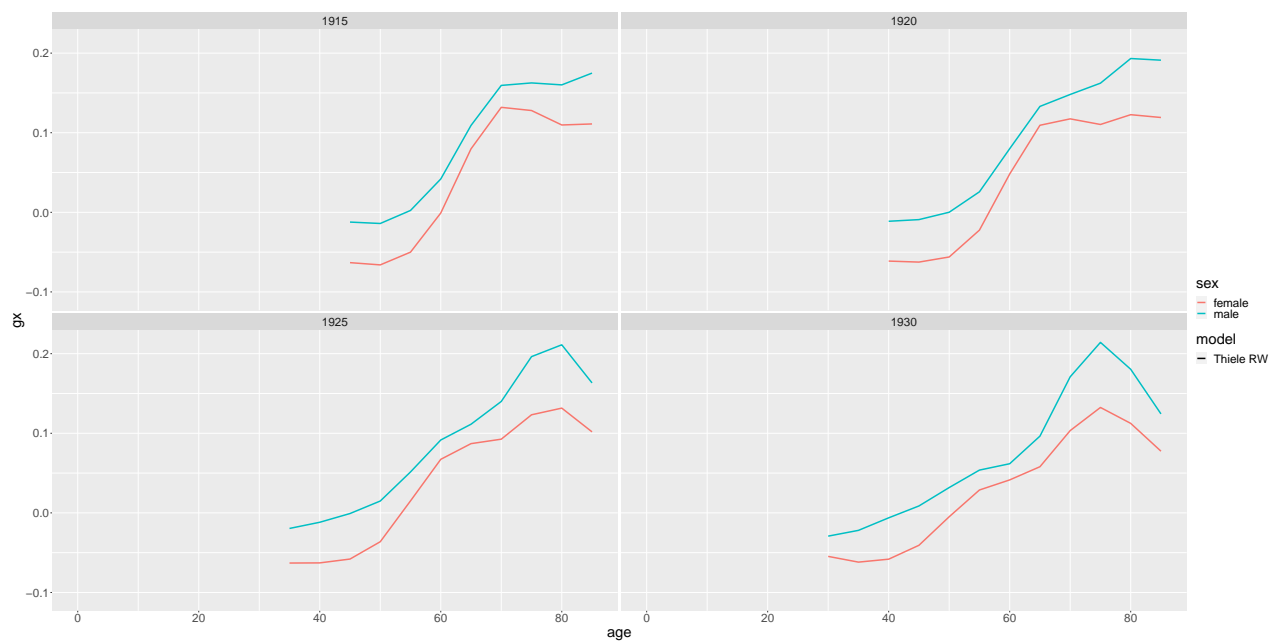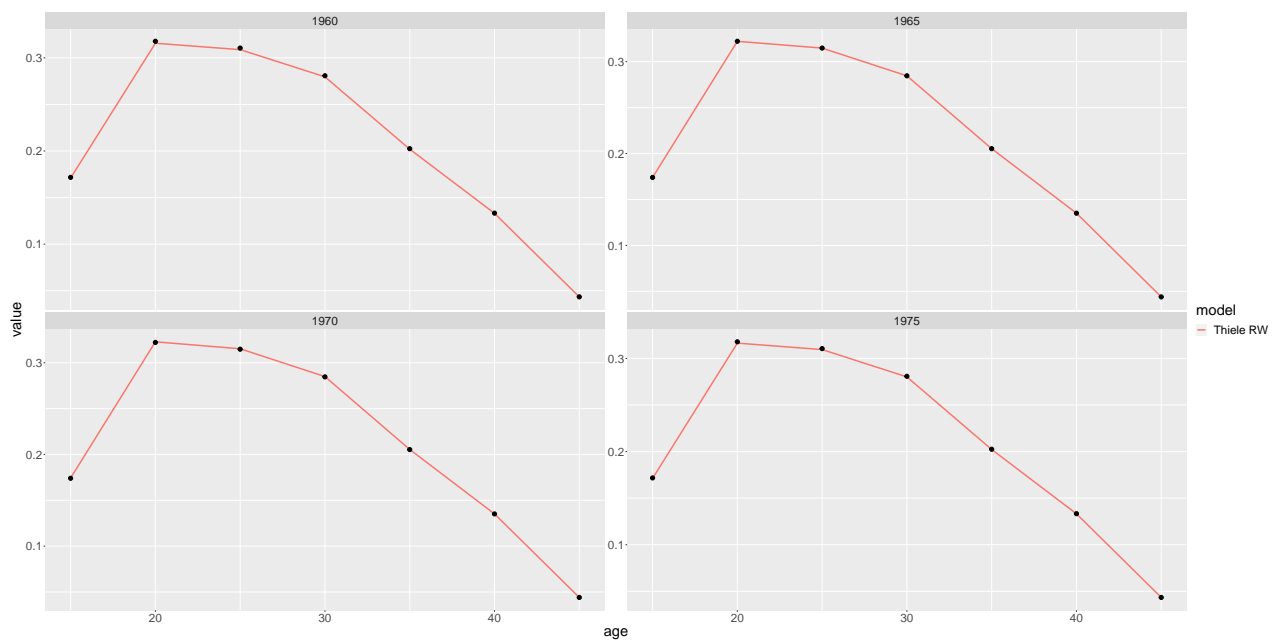
9

Figure 14: Migration

Figure 15: Migration
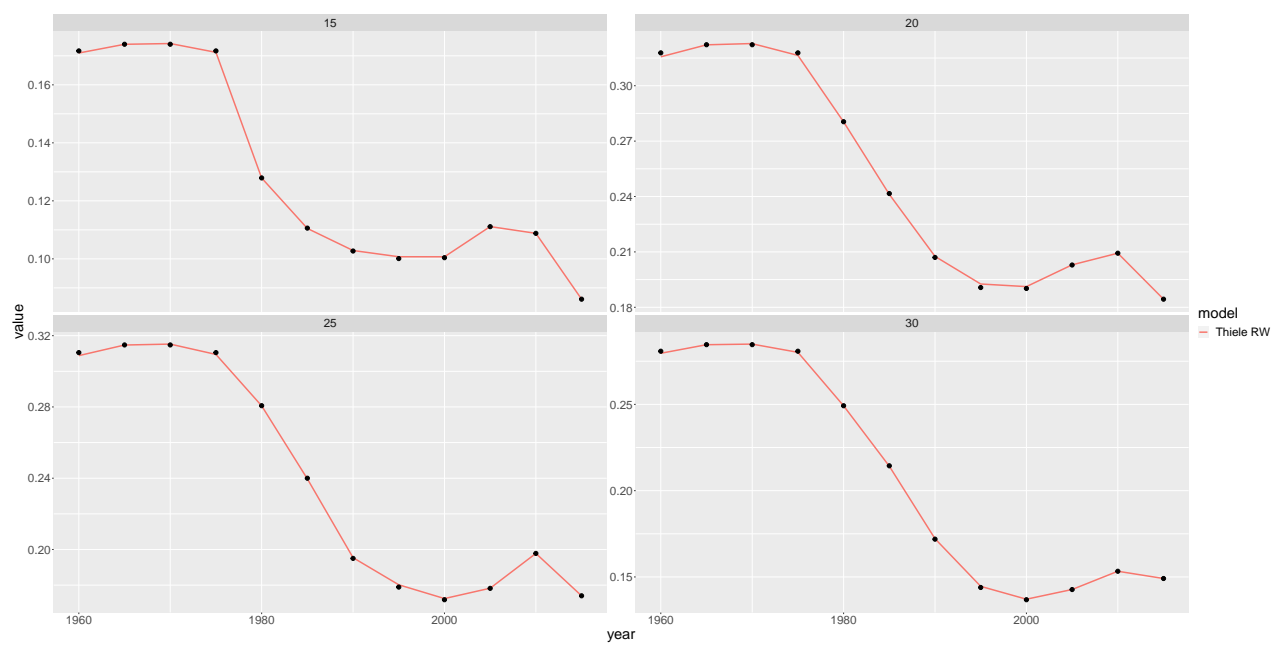
10

Figure 16: Migration

Figure 17: Fertility

Figure 18: Fertility