Niger

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

## # A tibble: 18 x 4
##    aggr.age  `1977`   `1988`   `2012`
## *     <dbl>   <dbl>    <dbl>    <dbl>
## 1         0 480868. 767944. 1804965
## 2         5 379474. 591098. 1470500
## 3        10 323758. 413151. 1075134
## 4        15 279586. 345464.  893434
## 5        20 259885. 337382.  689036
## 6        25 229768. 299763.  549851
## 7        30 182961. 233007.  467055
## 8        35 138789. 175234.  379821
## 9        40  97880. 135982.  296350
## 10       45  71277. 101152.  256364
## 11       50  52956.  76243.  196965
## 12       55  41285.  58936.  153305
## 13       60  32627.  46963.  114978
## 14       65  25976.  36347.   94167
## 15       70  29113.  27748.   71527
## 16       75   7027.  13818.   52730
## 17       80  22086.  26159.   34767
## 18       85     NA      NA    18941.

## [1] "Census Males"

## # A tibble: 18 x 4
##    aggr.age  `1977`   `1988`    `2012`
## *     <dbl>   <dbl>    <dbl>     <dbl>
## 1         0 488545. 778177. 1891826.
## 2         5 418323. 616100. 1524504.
## 3        10 312614. 426607. 1088679.
## 4        15 245025. 305321.  834345.
## 5        20 204773. 262859.  631280.
## 6        25 181324. 237907.  521141.
## 7        30 161887. 205936.  430506.
## 8        35 140820. 173789.  349963.
## 9        40 114989. 144546.  285869.
## 10       45  91540. 117817.  243368.
## 11       50  70724.  95765.  195591.
## 12       55  55425.  75808.  151019.
## 13       60  42384.  58913.  114428.
## 14       65  31976.  43365.   90566.
## 15       70  29092.  31006.   69752.
## 16       75   9029.  17178.   50476.
## 17       80  18057.  25771.   31506.
## 18       85     NA      NA    13999.
```

Thiele log-Normal Hump RW

```
##    user  system elapsed
##   31.29    0.78   32.30
```

```
## [1] "relative convergence (4)"
```

Thiele log-Normal Hump RW (Pop 5-9 to 70-74, DHS 15-19 to 45-49)

```
##    user  system elapsed
##   24.27    0.45   24.80
```

```
## [1] "relative convergence (4)"
```
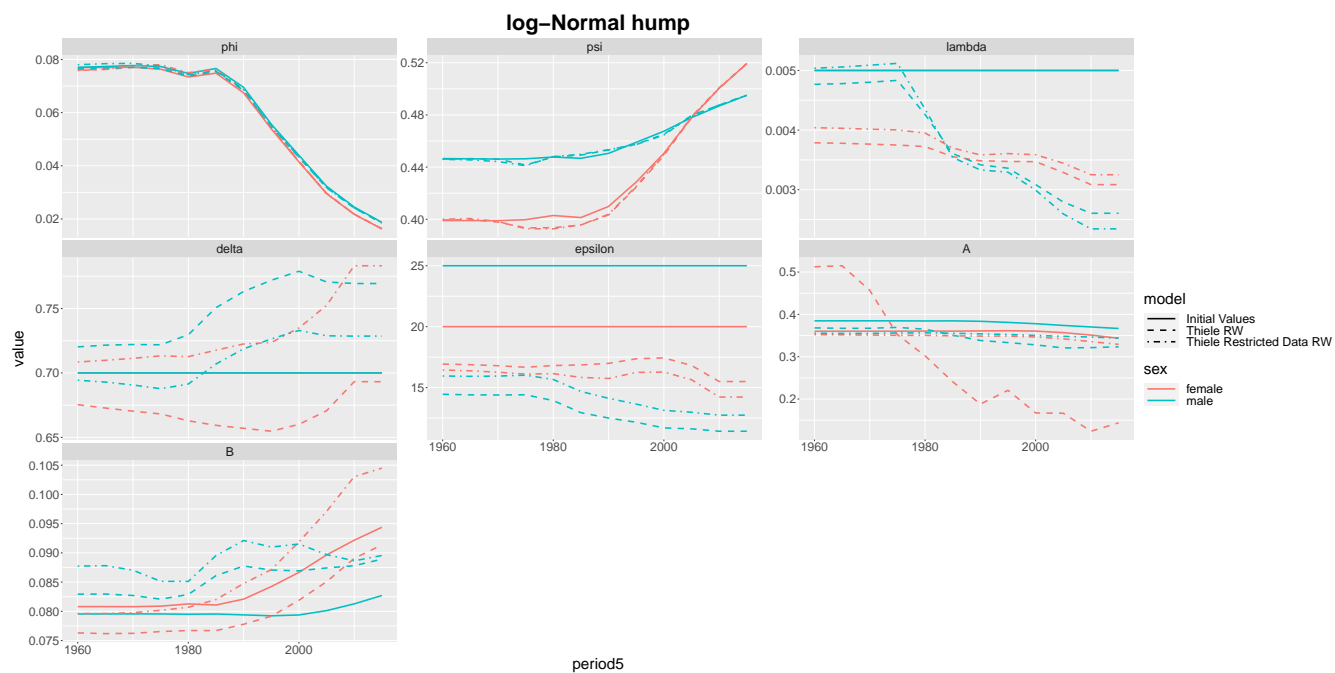
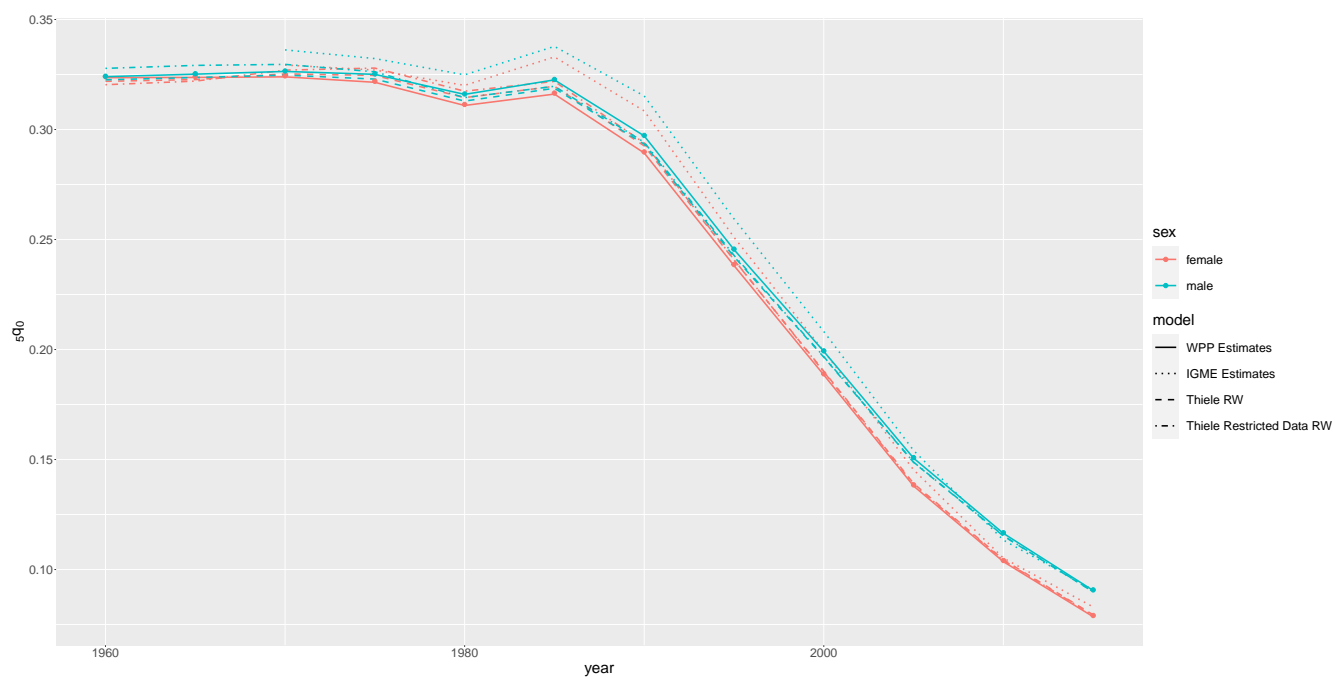Figure 1: Estimated parameters

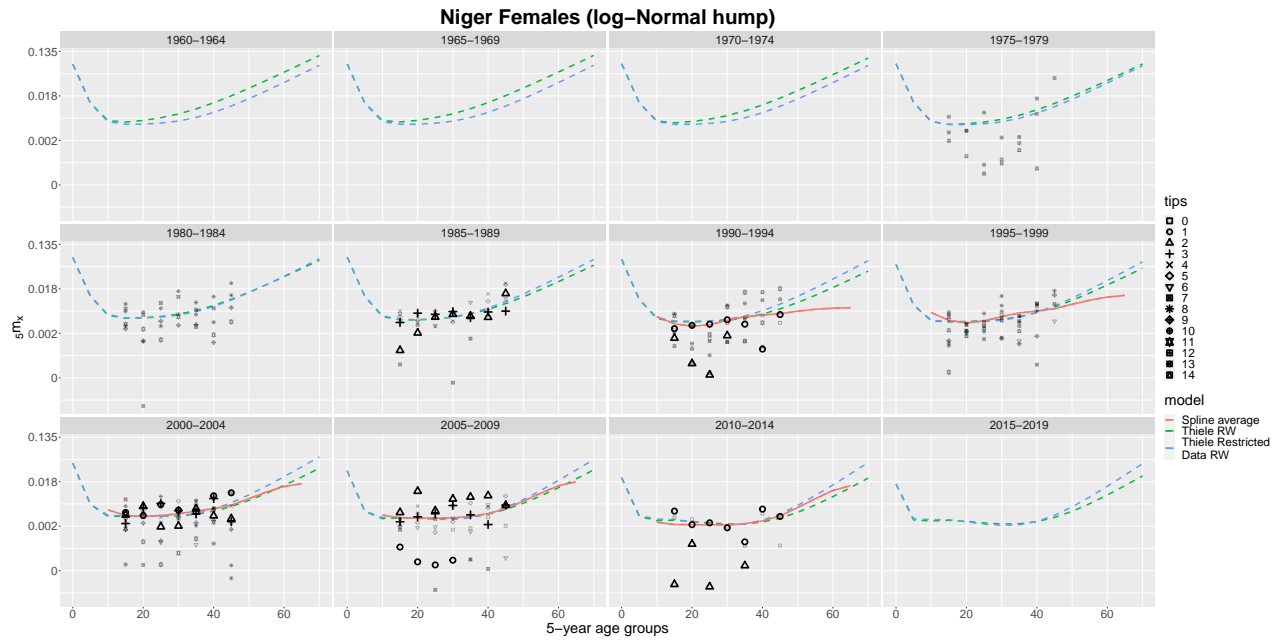Figure 2: Estimated $_{45}q_{15}$

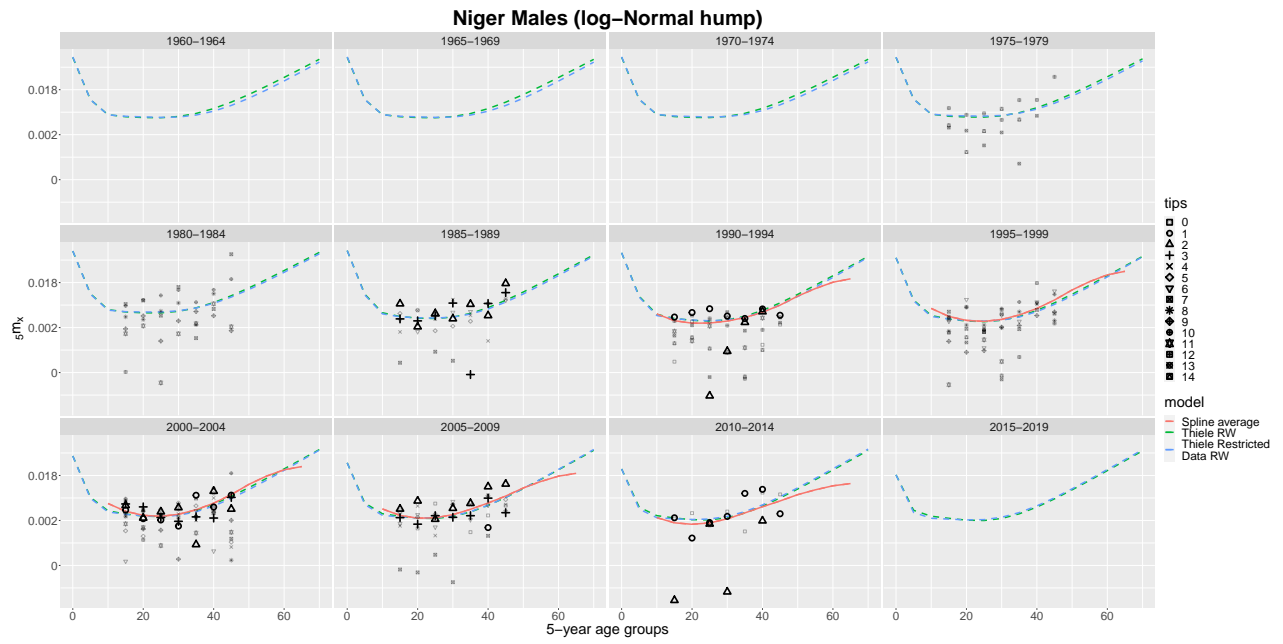Figure 3: Estimated $_5q_0$

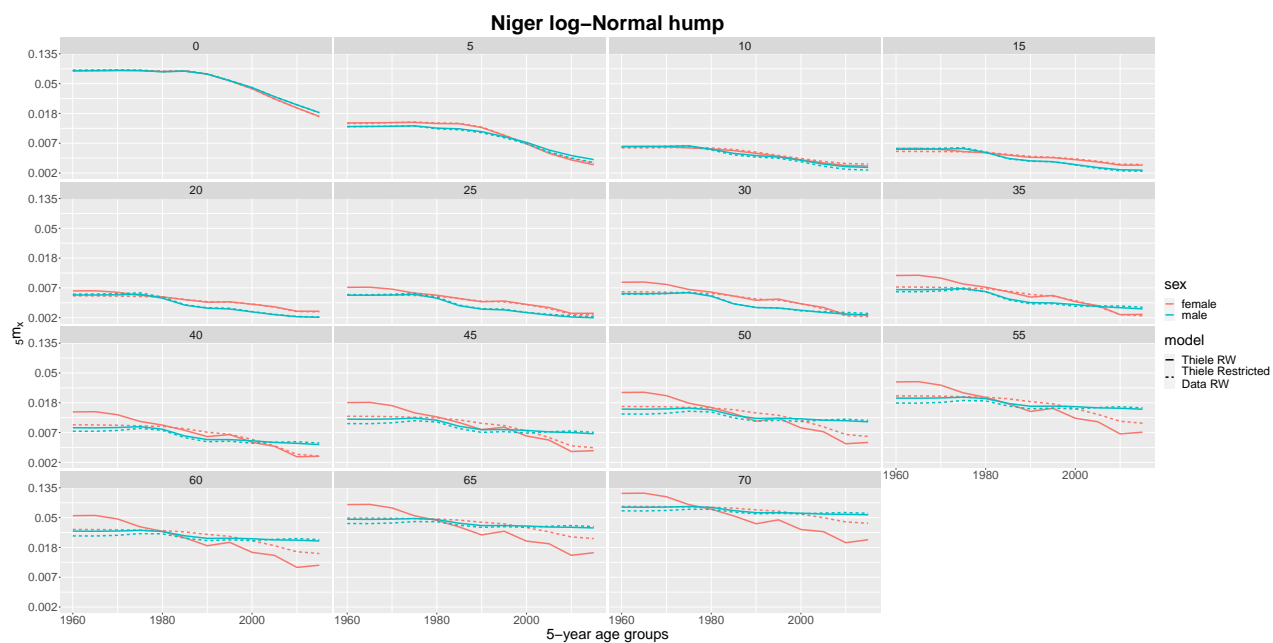Figure 4: Mortality Schedules

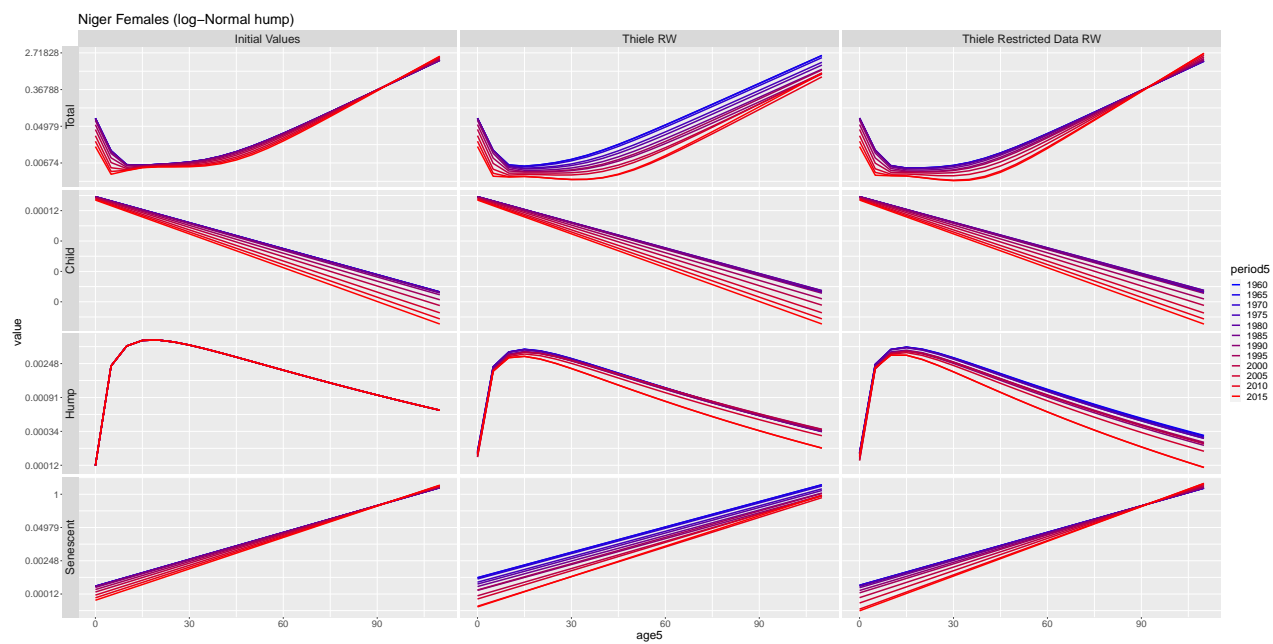Figure 5: Mortality Schedules

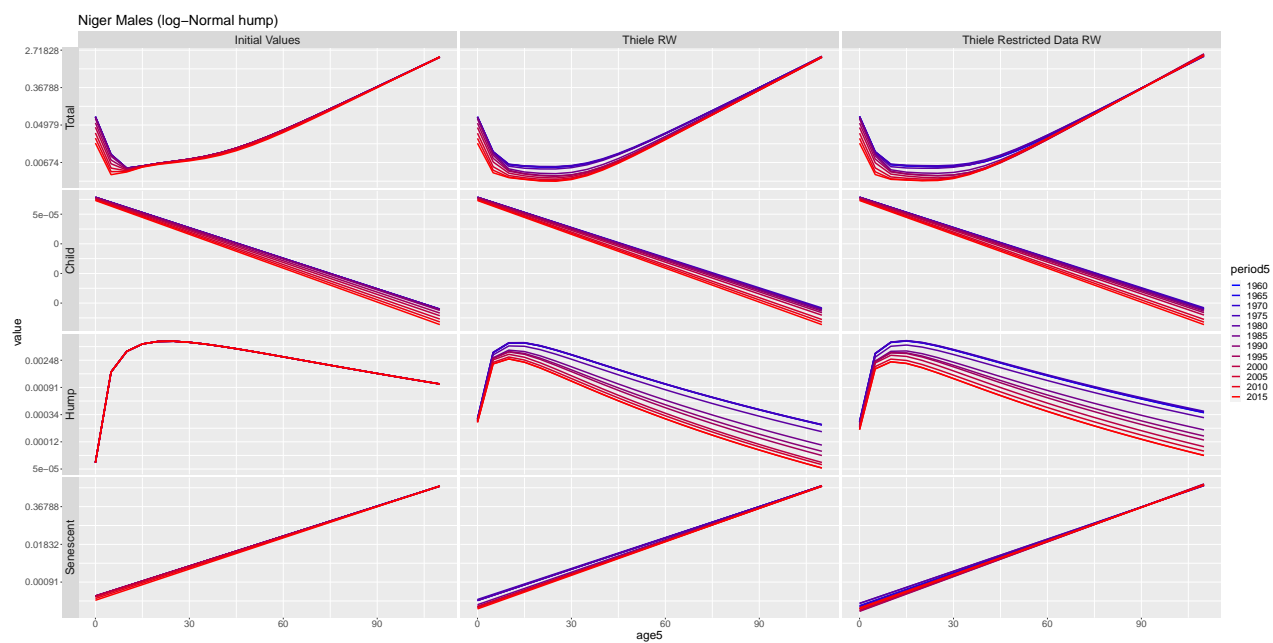Figure 6: Mortality Schedules
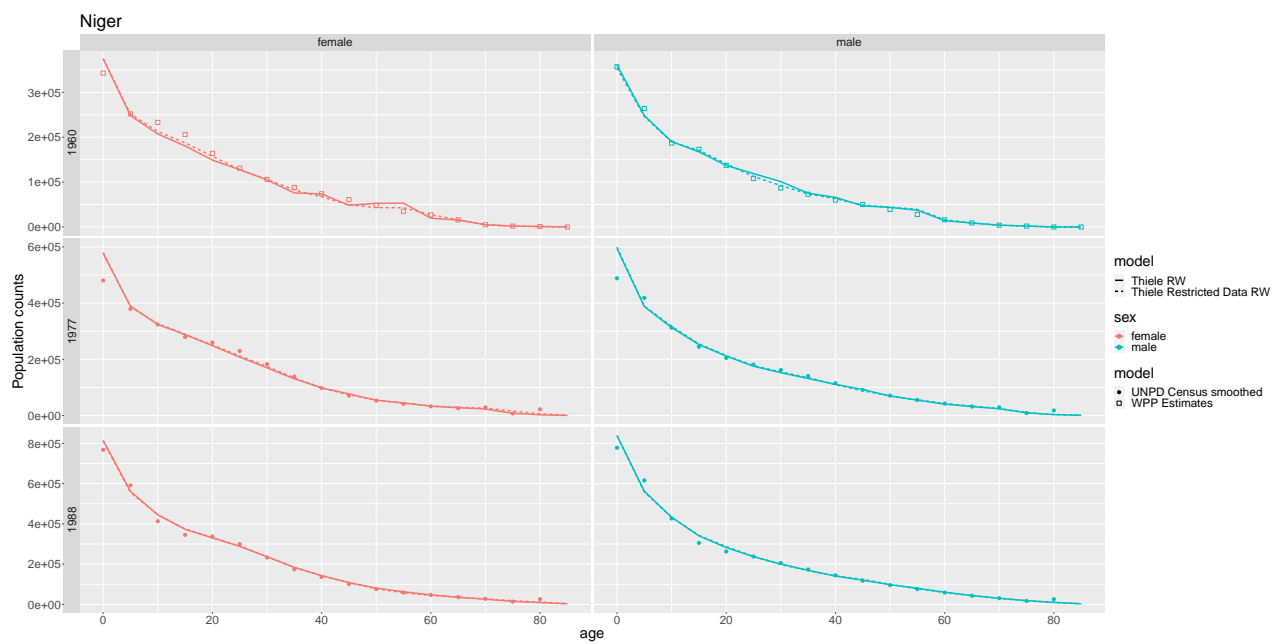

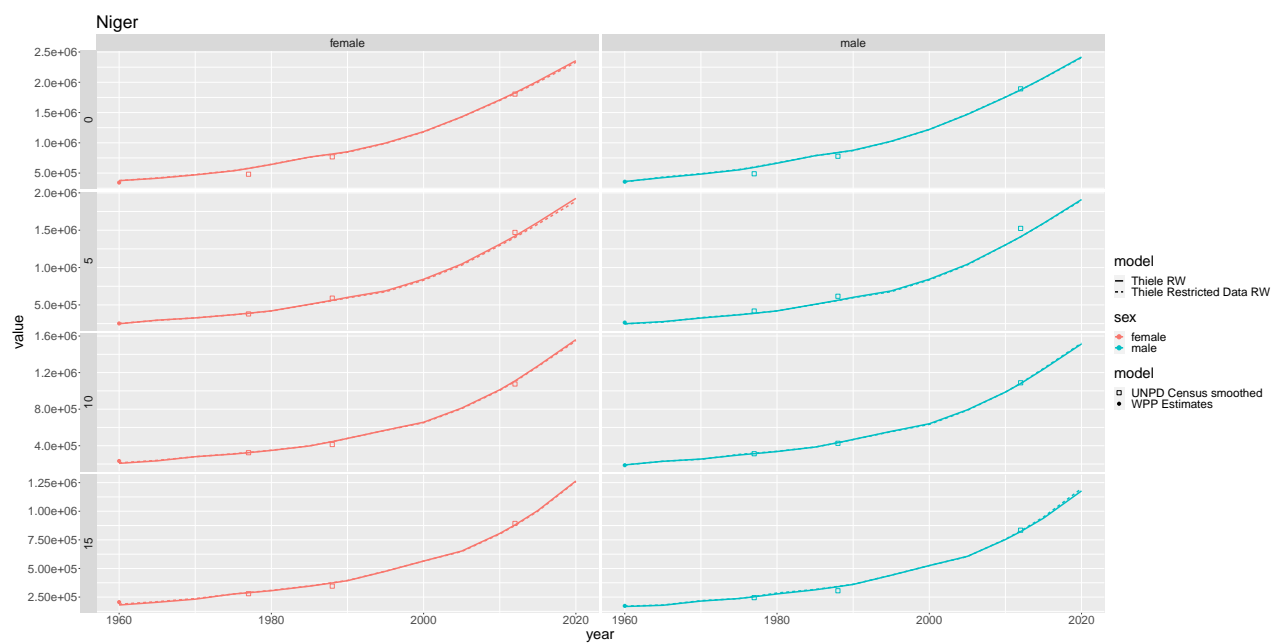Figure 7: Thiele Decomposed

Figure 8: Thiele Decomposed
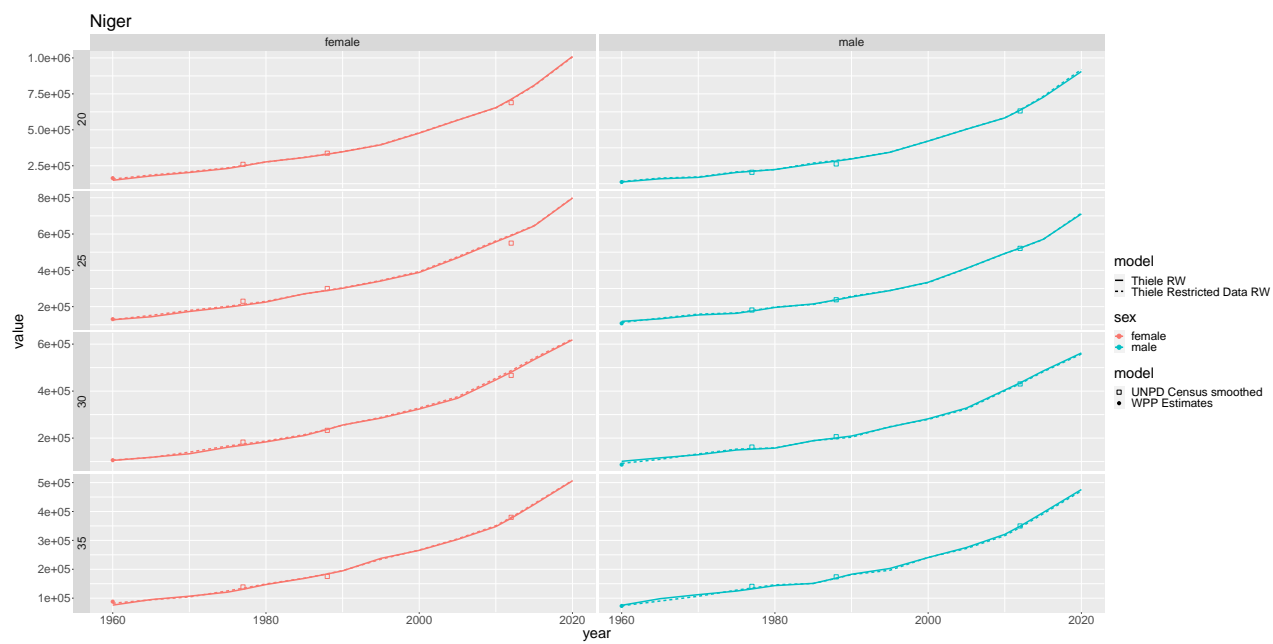

Figure 9: Population
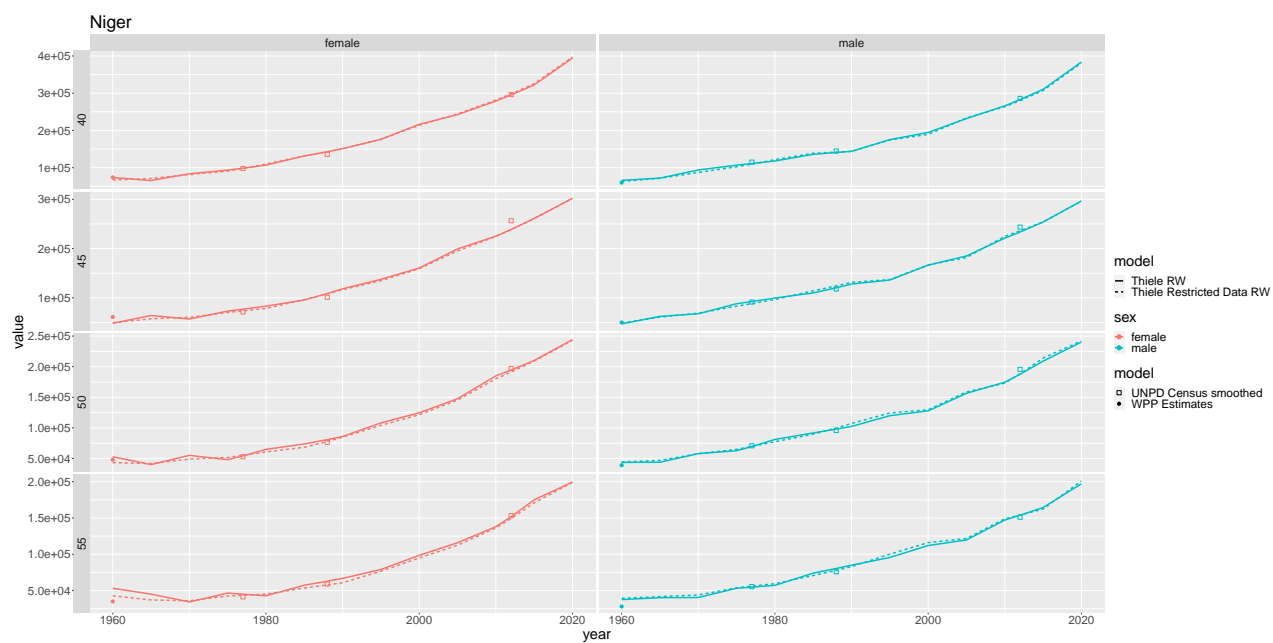
Figure 10: Population

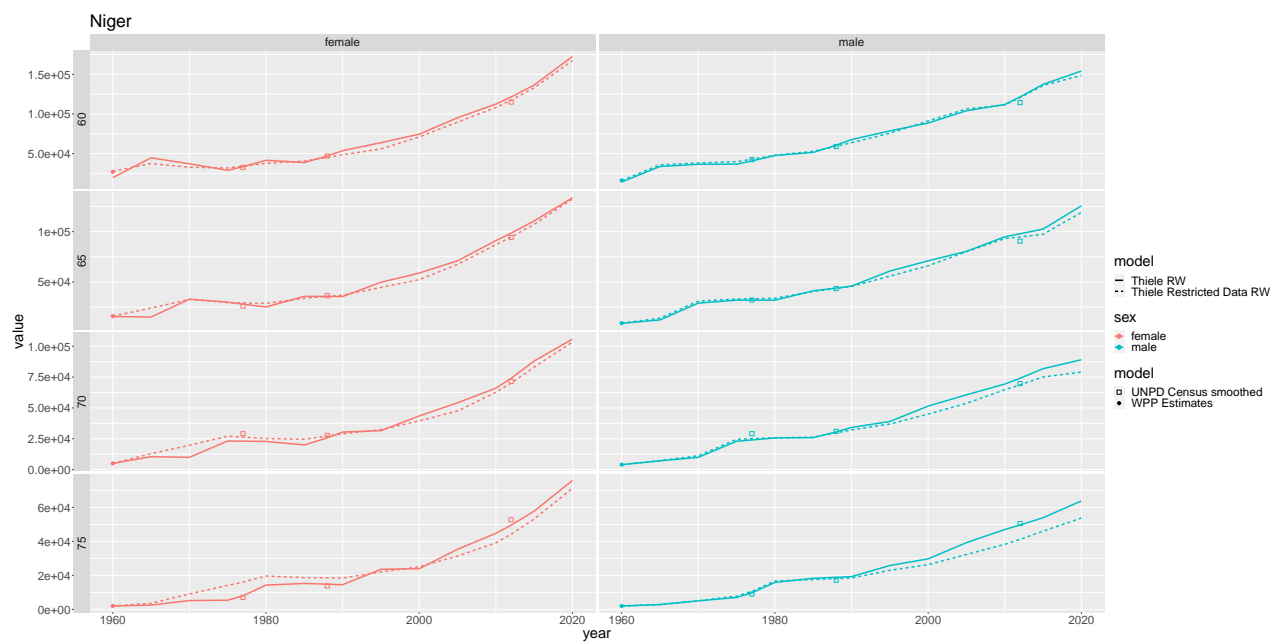Figure 11: Population

8

Figure 12: Population

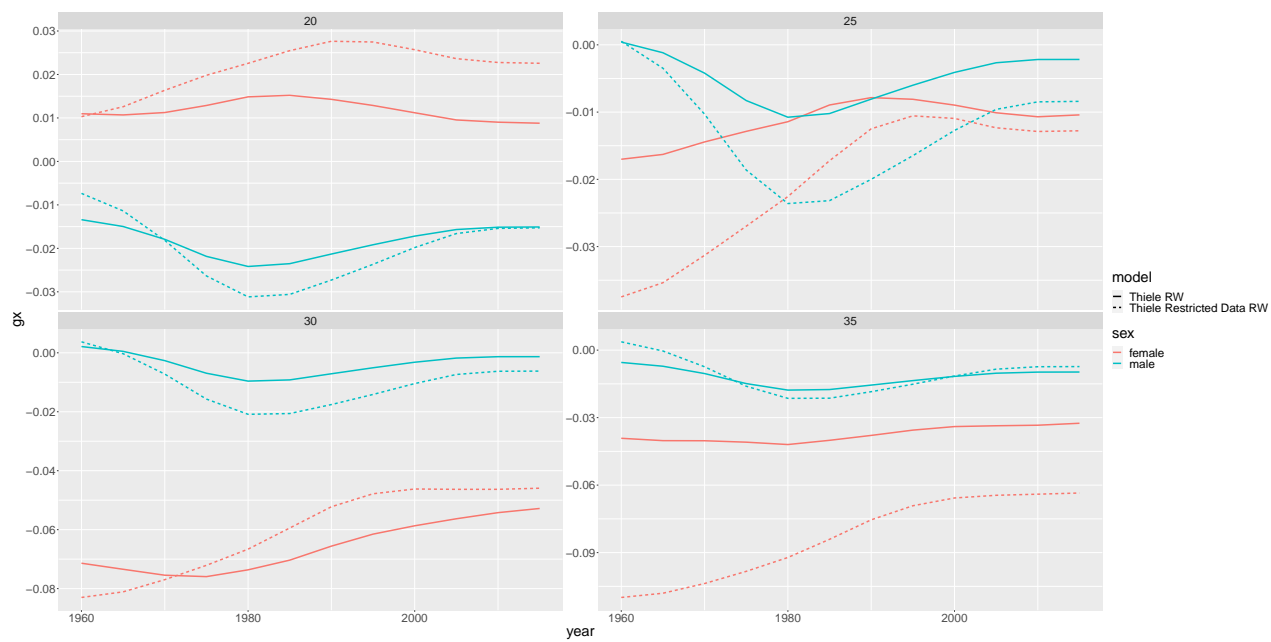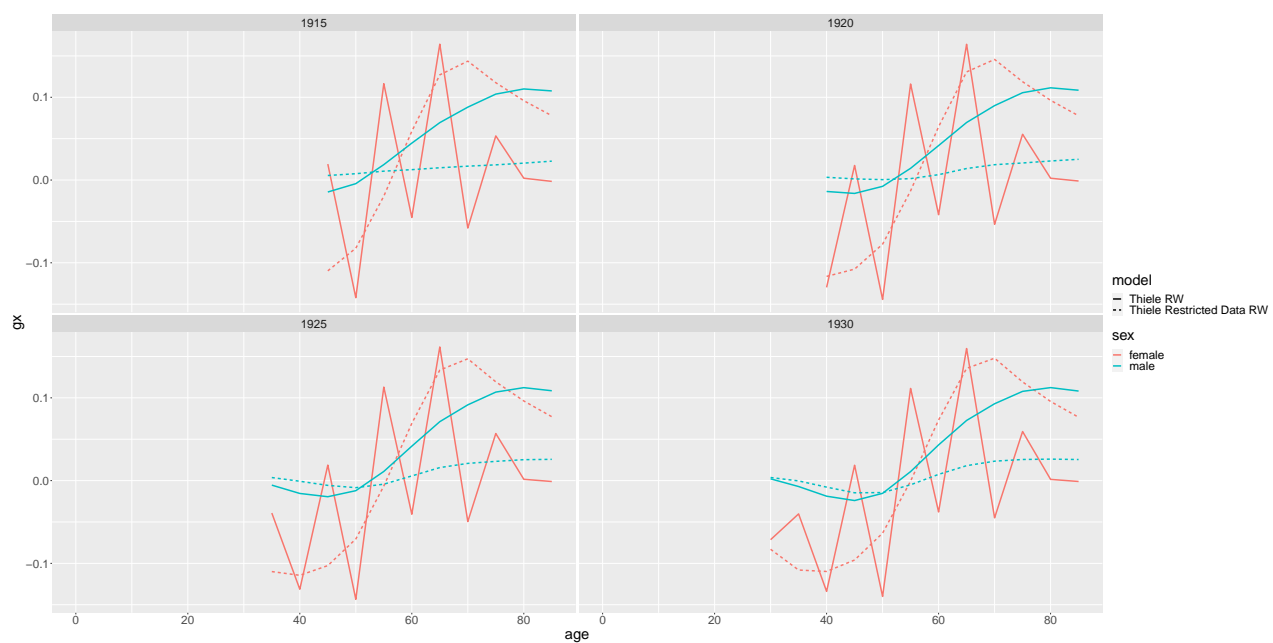Figure 13: Population

Figure 14: Migration

Figure 15: Migration
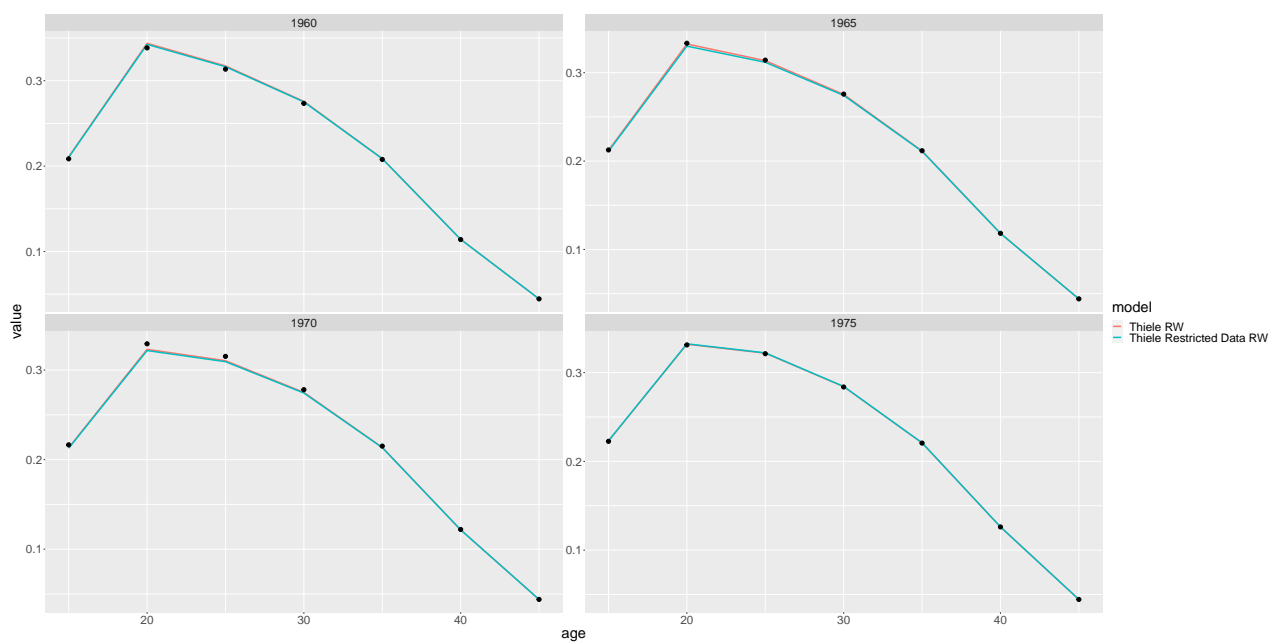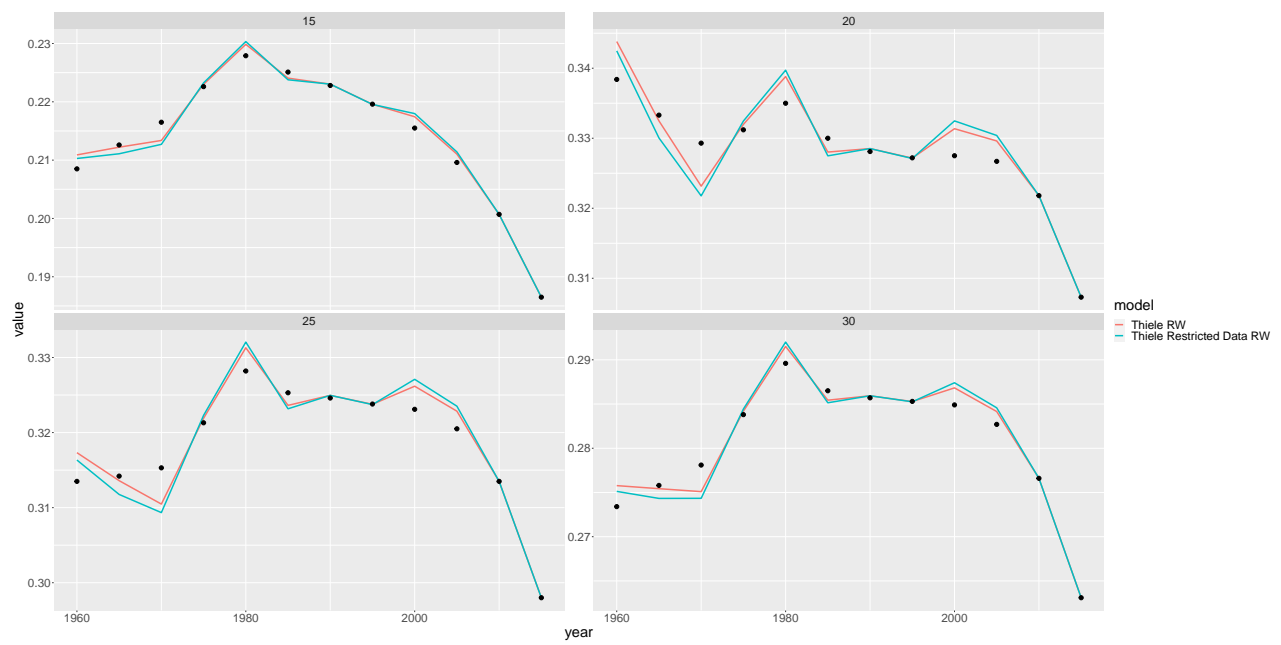
10

Figure 16: Migration

Figure 17: Fertility

11

Figure 18: Fertility