Mali

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

```
## # A tibble: 81 x 4
##      age  `1987`  `1998`  `2009`
##    <dbl>   <dbl>   <dbl>   <dbl>
##  1     0 124801. 142036  223369.
##  2     1 130699. 143506. 257789.
##  3     2 143705. 166117. 268530.
##  4     3 145236. 169658. 265587.
##  5     4 145604. 175557. 266091.
##  6     5 142436. 177505. 259251.
##  7     6 133063. 169191. 247642.
##  8     7 123495. 159883. 237080.
##  9     8 112436. 150065. 224554.
## 10     9 102337. 139890. 210831.
## # ... with 71 more rows
```

```
## [1] "Census Females 5-year"
```

```
## # A tibble: 18 x 2
##      age  `1976`
##    <dbl>   <dbl>
##  1     0 589461.
##  2     5 469318.
##  3    10 365111.
##  4    15 313740.
##  5    20 283085.
##  6    25 256486.
##  7    30 221242.
##  8    35 176439.
##  9    40 140031.
## 10    45 112098.
## 11    50  92157.
## 12    55  77736.
## 13    60  65678.
## 14    65  48225.
## 15    70  32268.
## 16    75  22262.
## 17    80  17833.
## 18    85  14930.
```

```
## [1] "Census Males"
```

```
## # A tibble: 81 x 4
##      age  `1987`  `1998`  `2009`
##    <dbl>   <dbl>   <dbl>   <dbl>
##  1     0 125225. 144399  228866.
##  2     1 132390. 146371. 265188.
##  3     2 145200. 169490. 275420.
##  4     3 146748. 173008  272373.
##  5     4 147629. 179622. 273244.
##  6     5 144982. 182525. 266880.
```

```
##  7     6 136266. 174741. 255699.
##  8     7 128089. 166574. 246234.
##  9     8 118465. 158195. 234852.
## 10     9 109481. 149394. 222229.
## # ... with 71 more rows
```

```
## [1] "Census Males 5-year"
```

```
## # A tibble: 18 x 2
##      age  `1976`
##    <dbl>   <dbl>
##  1     0 587090.
##  2     5 478652.
##  3    10 371670.
##  4    15 294640.
##  5    20 236401.
##  6    25 201103.
##  7    30 183257.
##  8    35 162001.
##  9    40 137909.
## 10    45 116691.
## 11    50  99549.
## 12    55  84109.
## 13    60  67783.
## 14    65  47273.
## 15    70  30306.
## 16    75  20072.
## 17    80  14093.
## 18    85  14057.
```

Thiele log-Normal Hump Spline

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

```
##       log_tau2_logpop       log_tau2_logpop       log_tau2_logpop       log_tau2_logpop          lo
##             4.7624293             6.0122732             4.2931301             5.5140157
##        log_dispersion        log_dispersion         log_lambda_tp              tp_slope
##             0.3617988             0.3084947             2.8190818            -0.0481475
##        log_lambda_phi        log_lambda_psi          log_lambda_A          log_lambda_B      log_la
##            11.0414408            11.2014909            10.9174476             9.4204849
##    log_lambda_epsilon
##             5.5591063
```

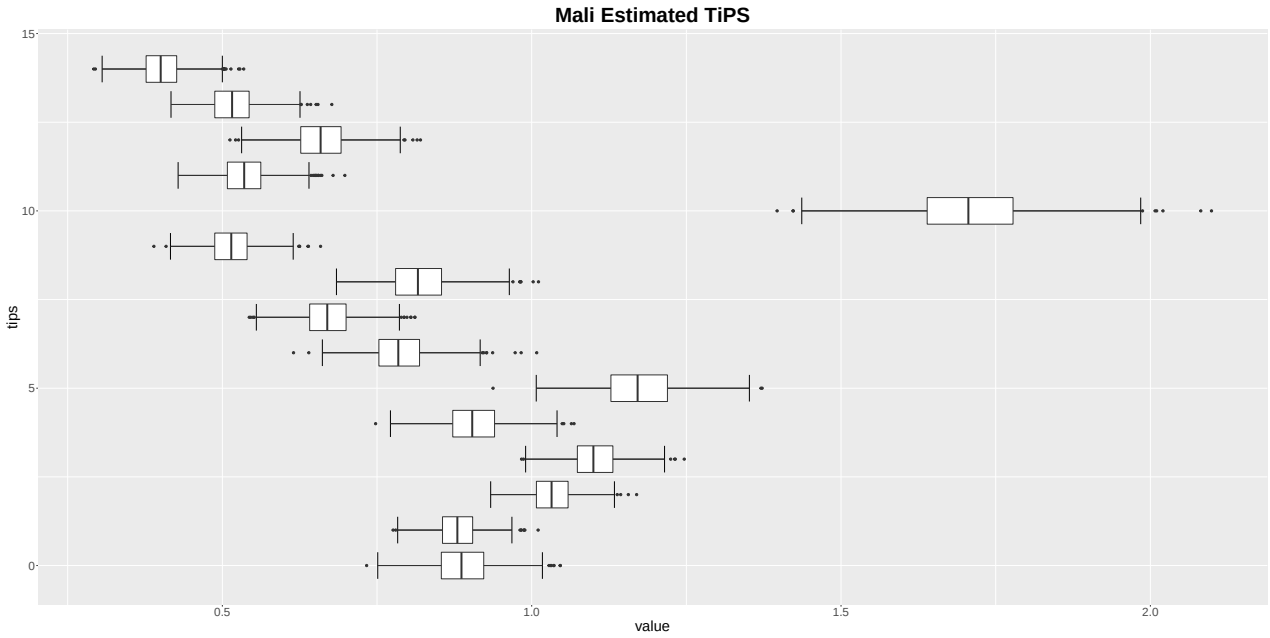

Figure 1: Estimated TiPS

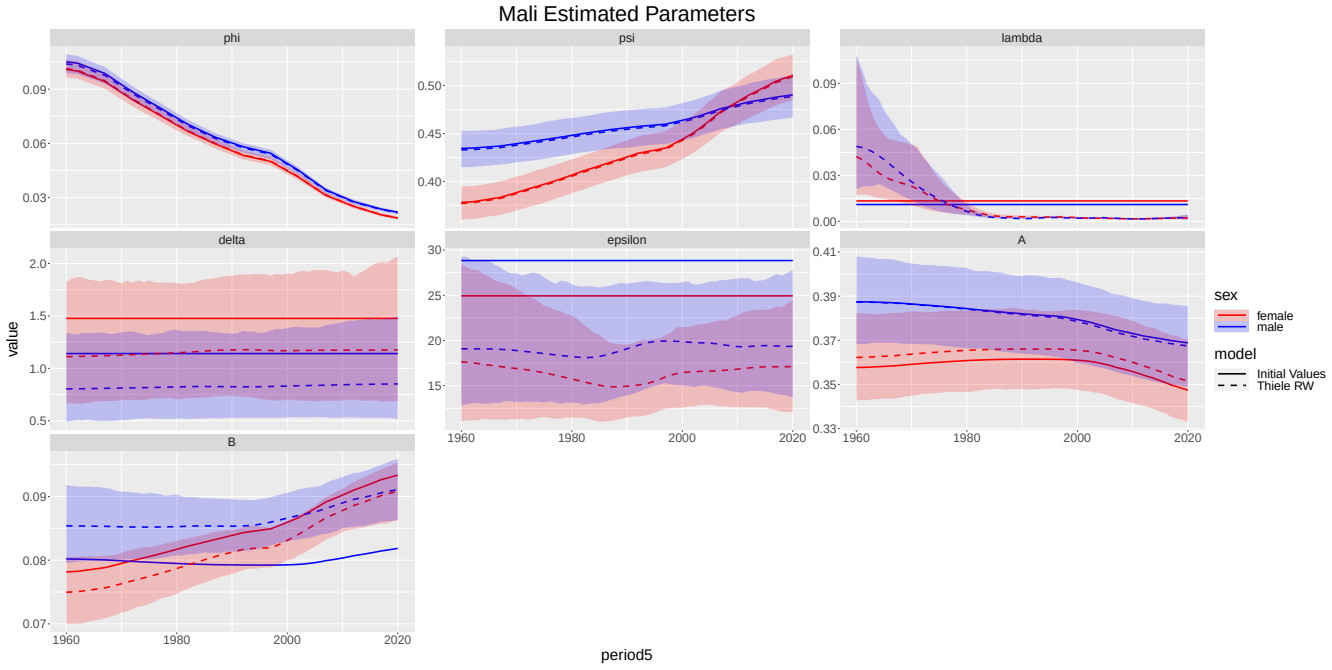

Figure 2: Estimated parameters

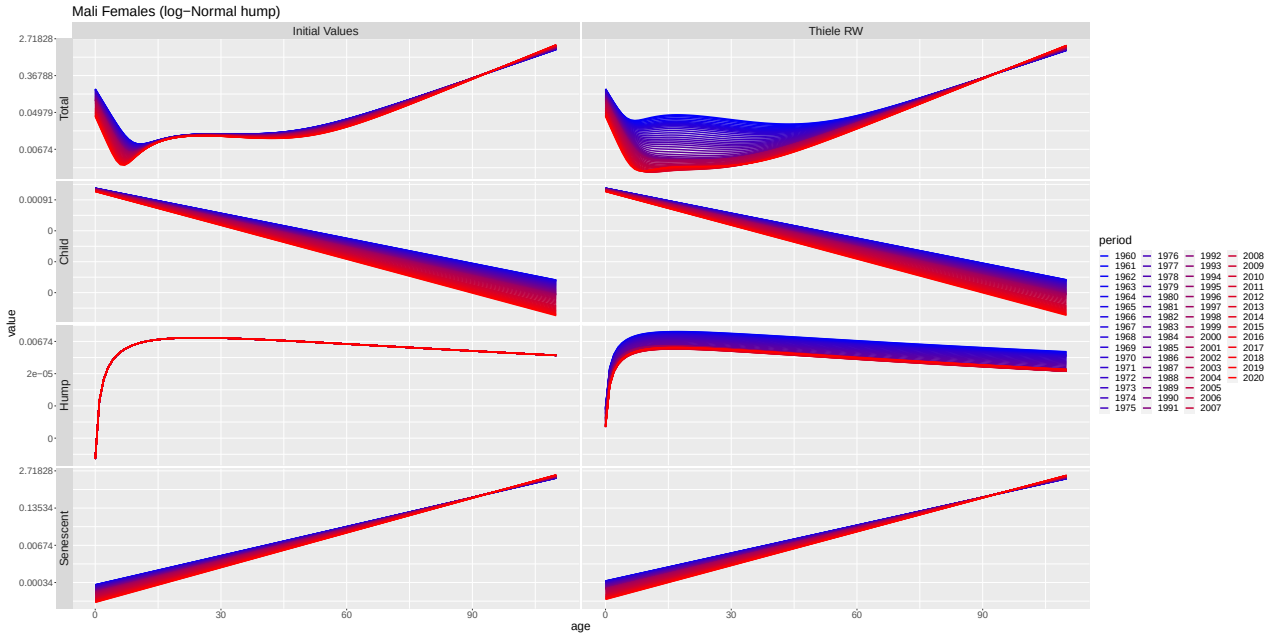

Figure 3: Thiele Decomposed

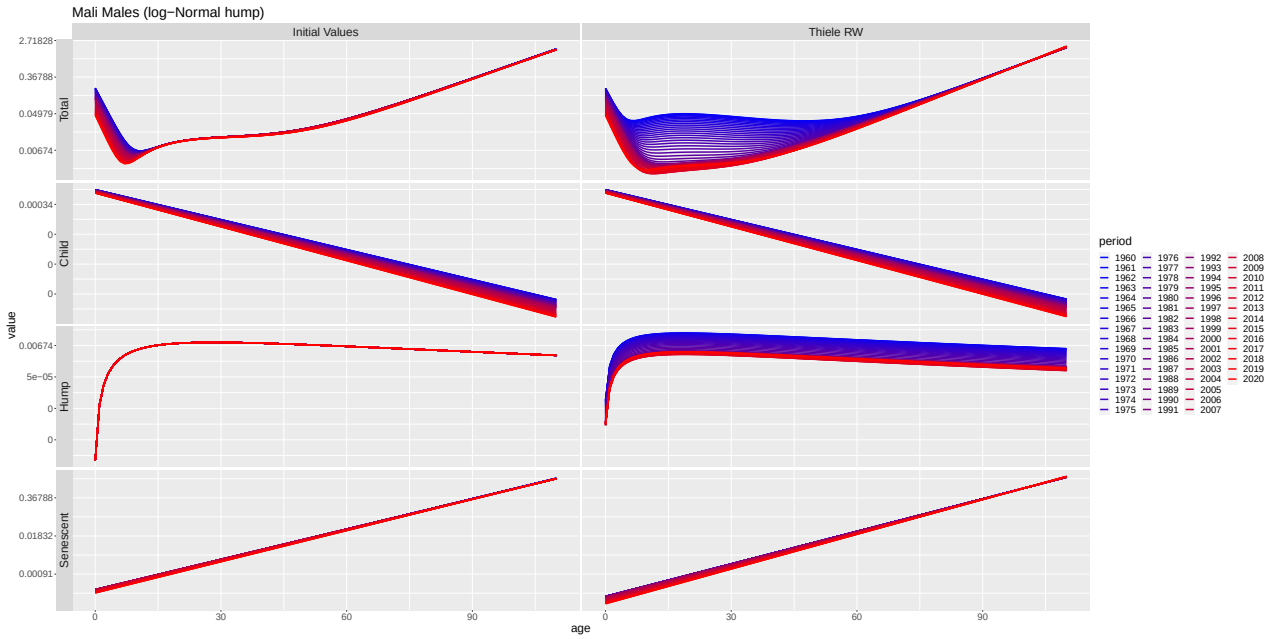

Figure 4: Thiele Decomposed

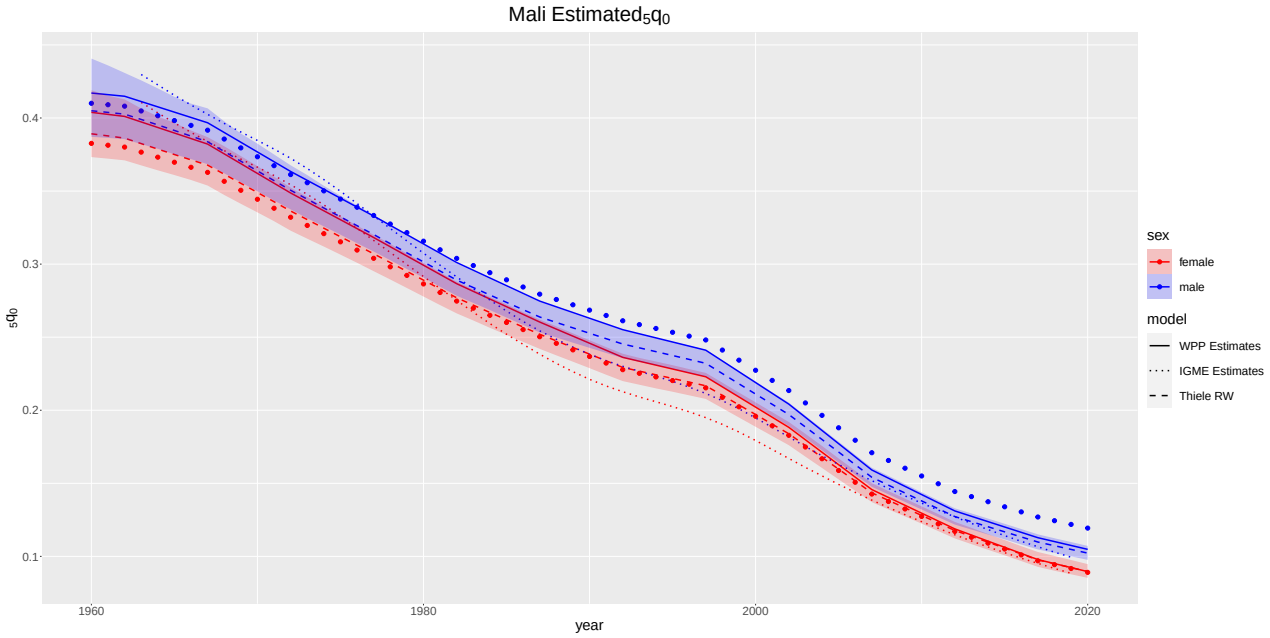

Figure 5: Estimated $_5q_0$

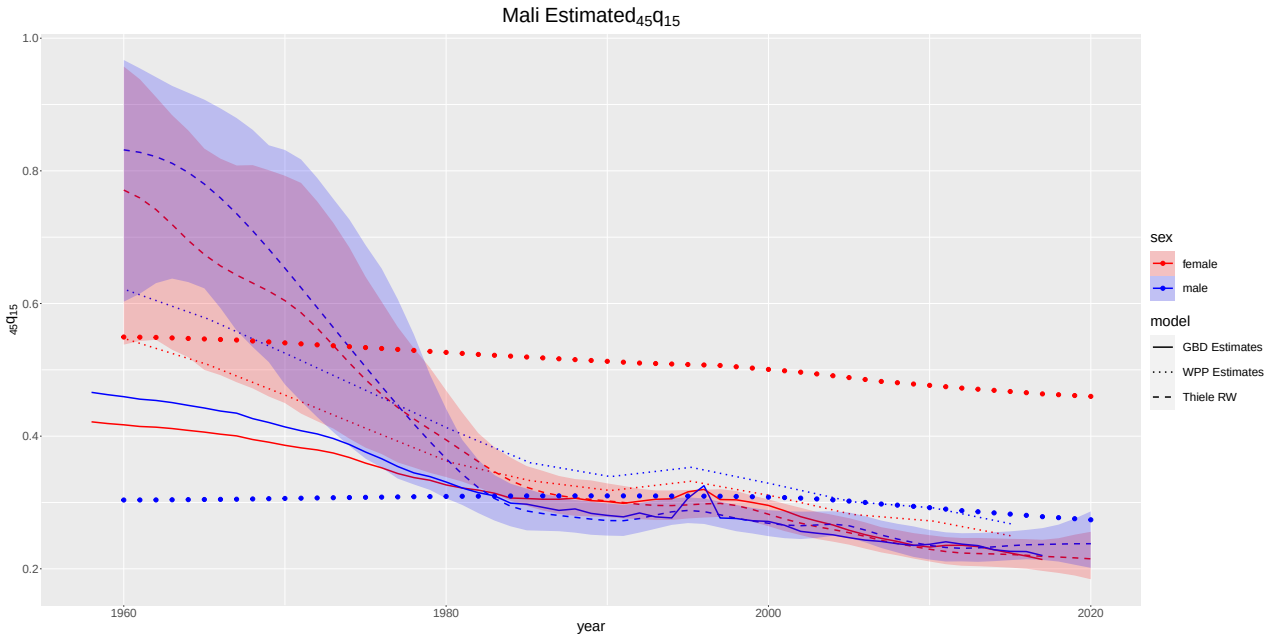

Figure 6: Estimated $_{45}q_{15}$

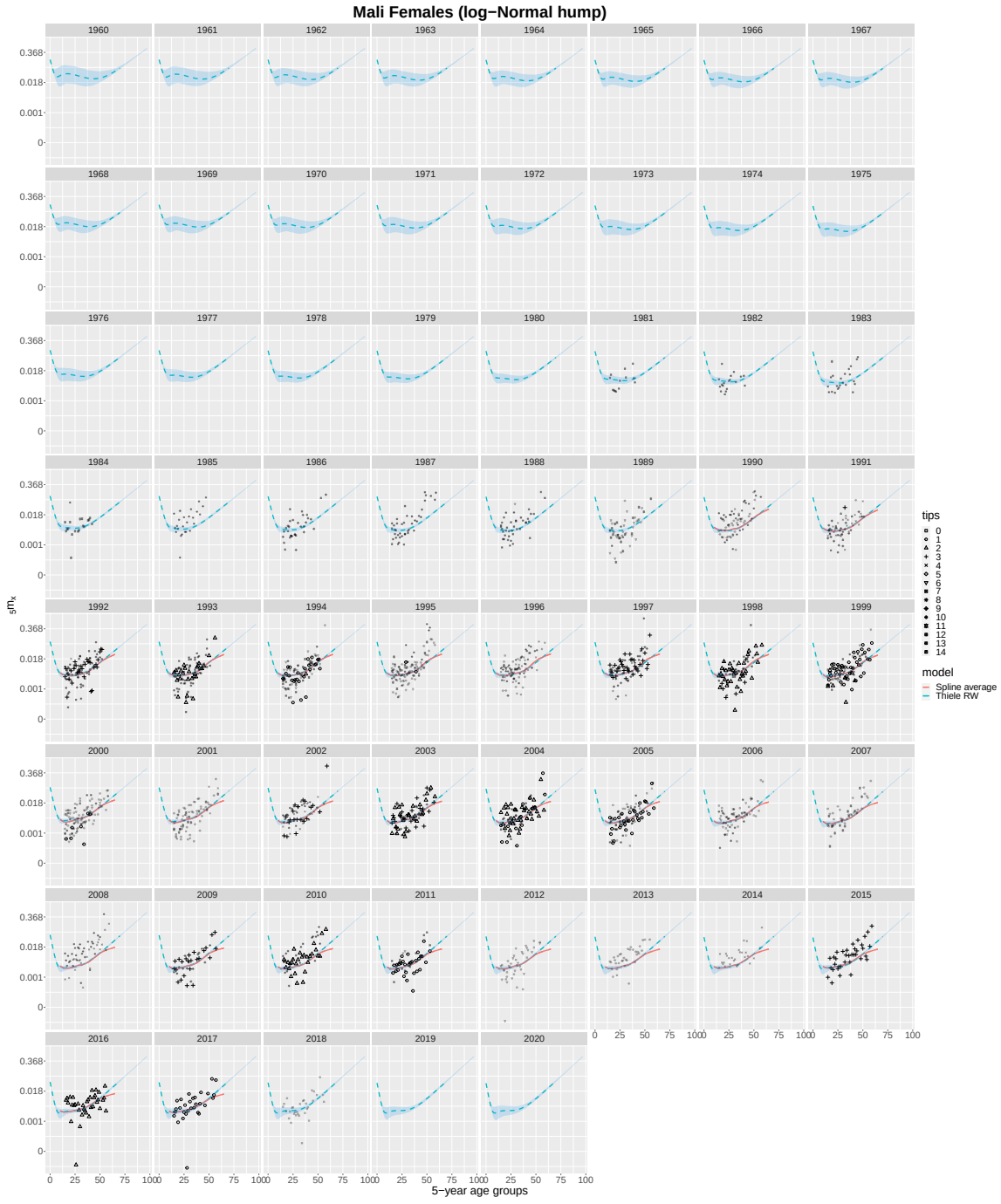

Figure 7: Mortality Schedules

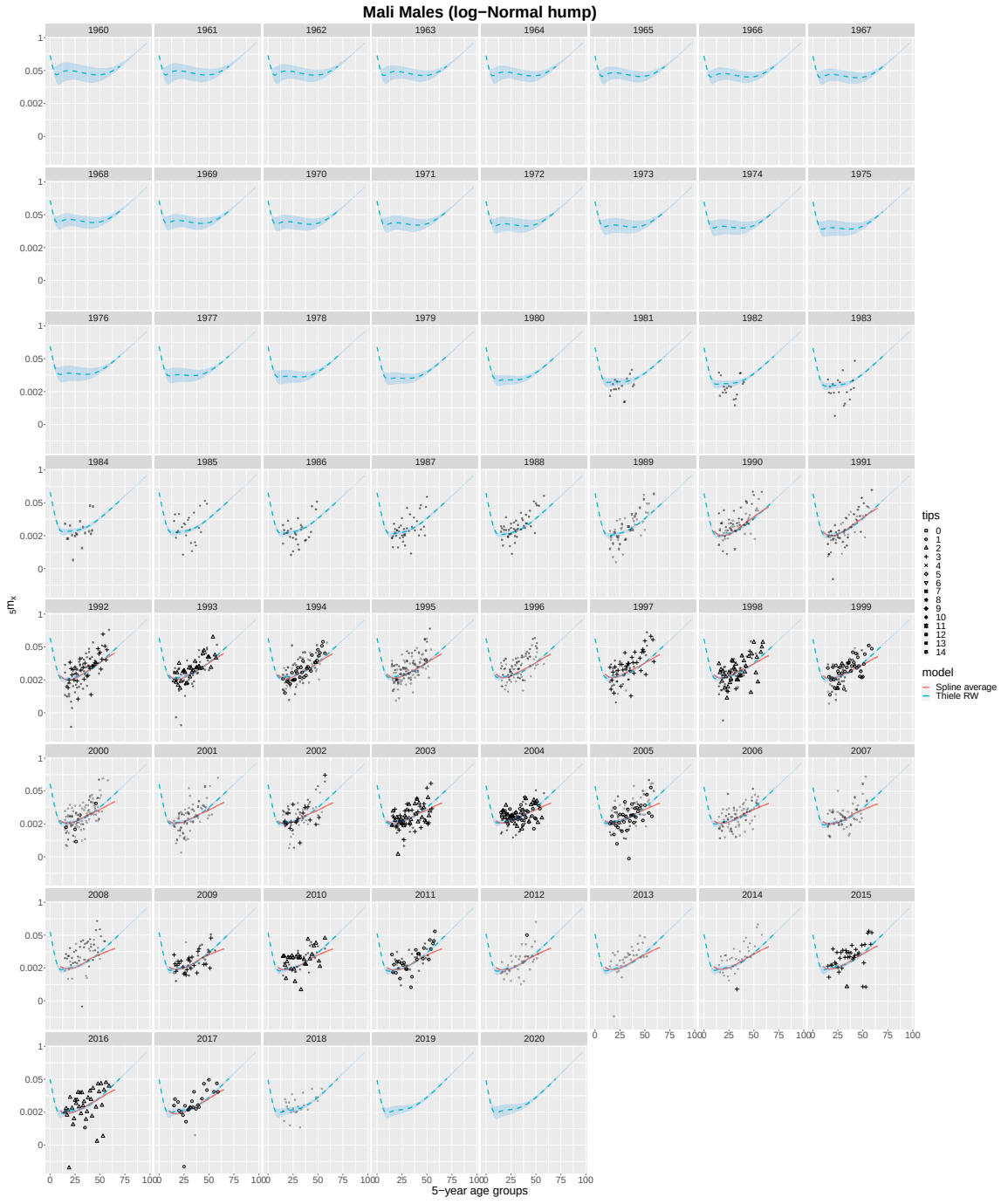

Figure 8: Mortality Schedules

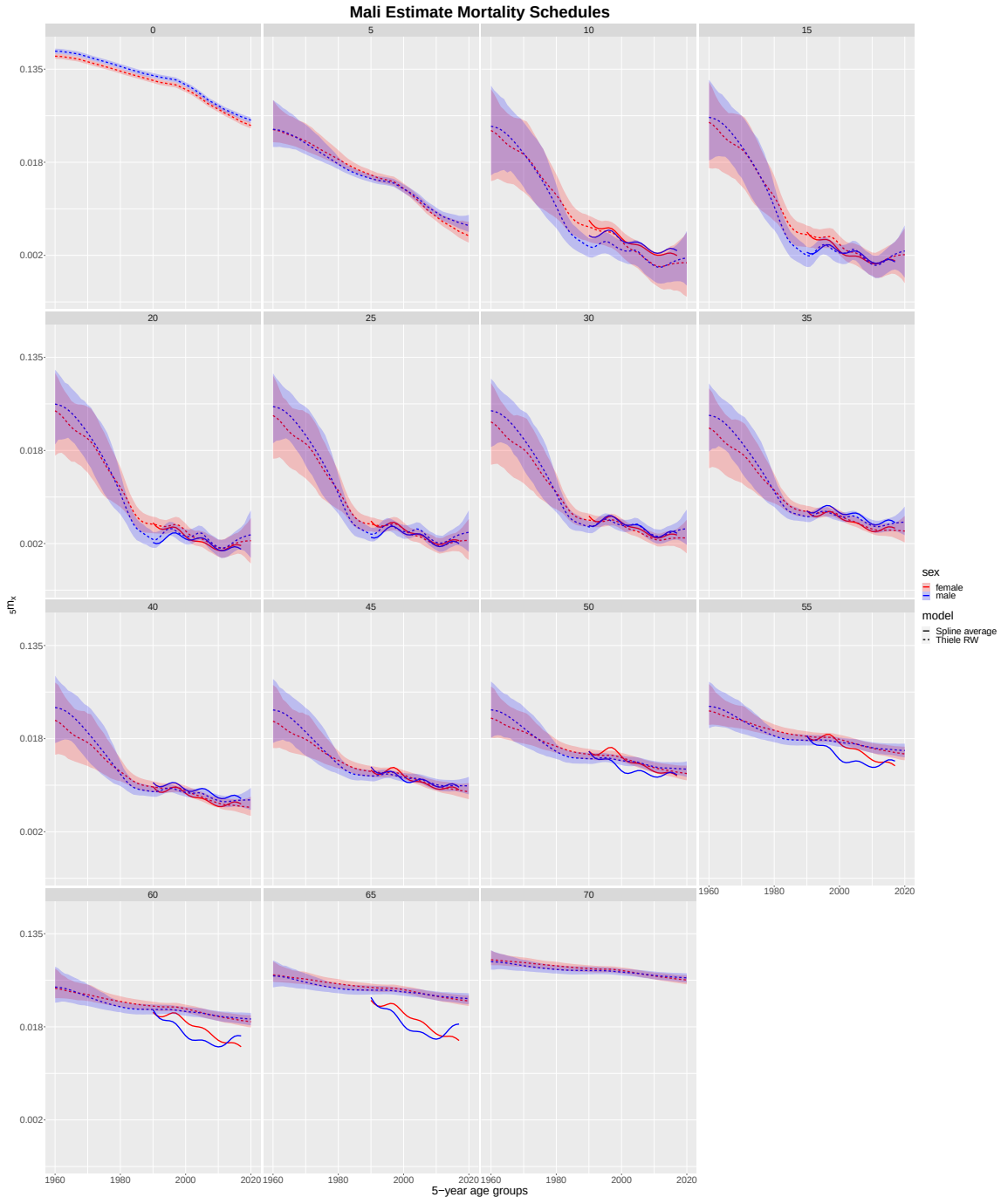

Figure 9: Mortality Schedules

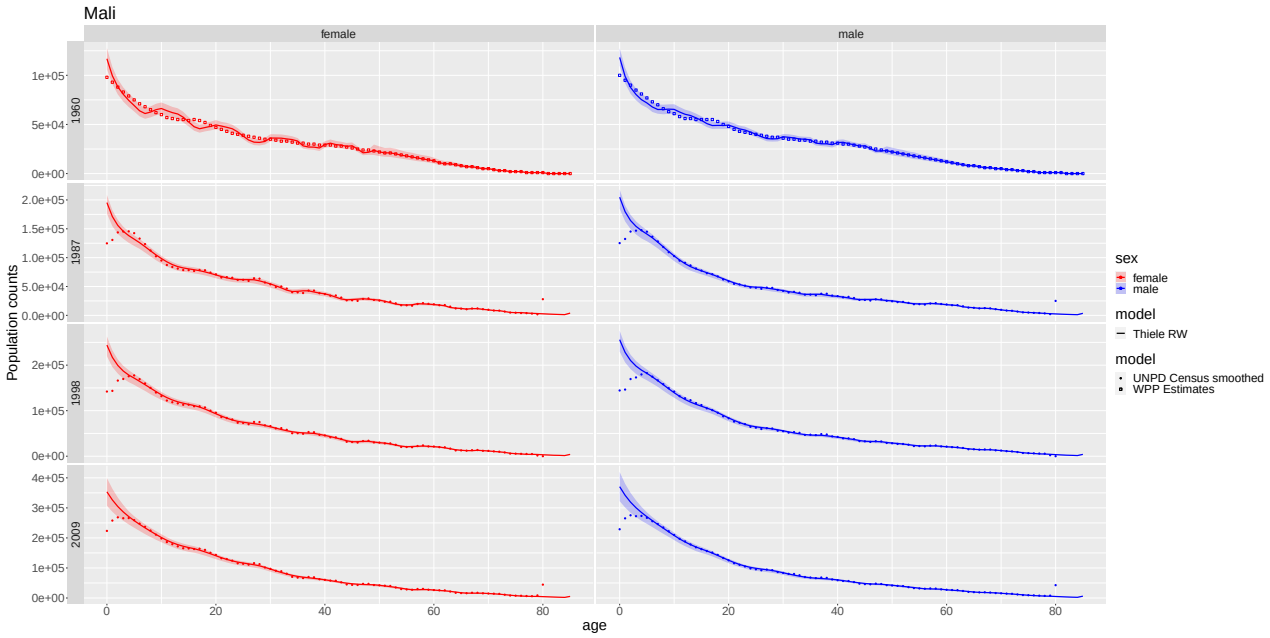

Figure 10: Population

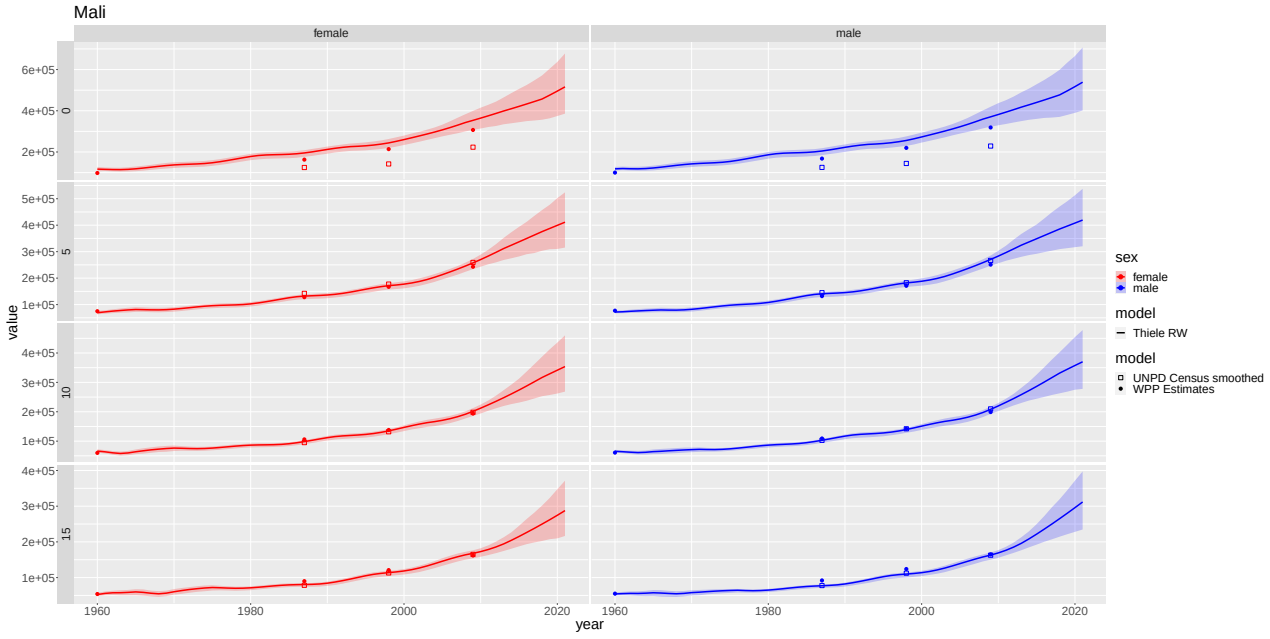

Figure 11: Population

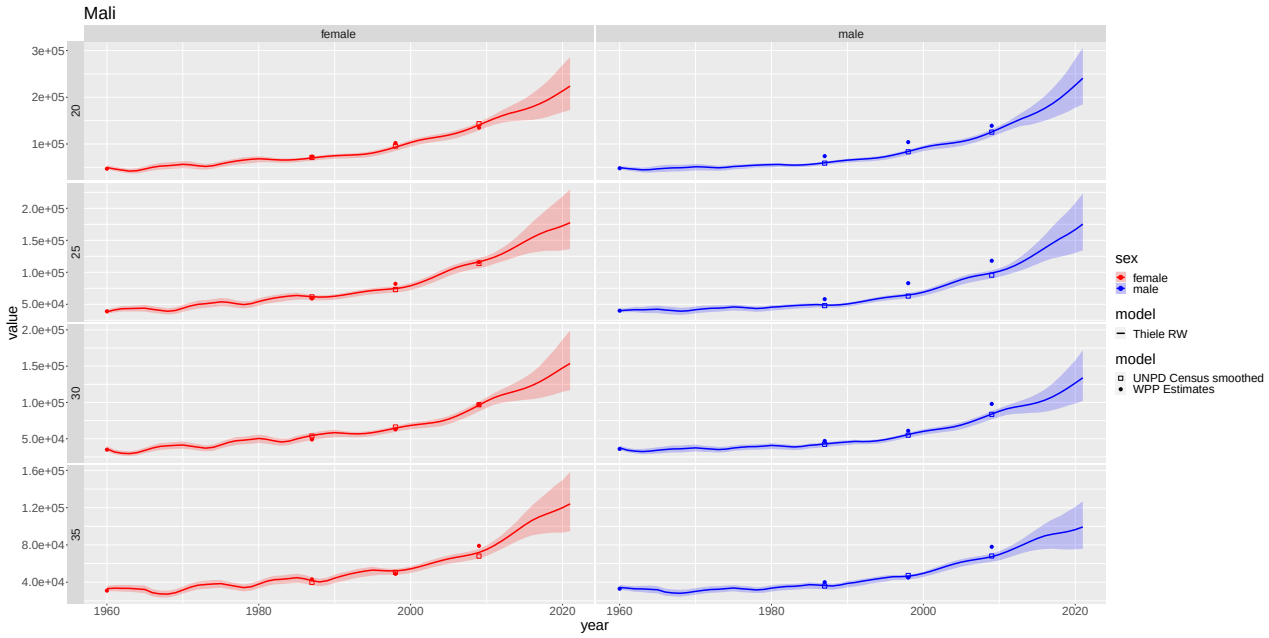

Figure 12: Population

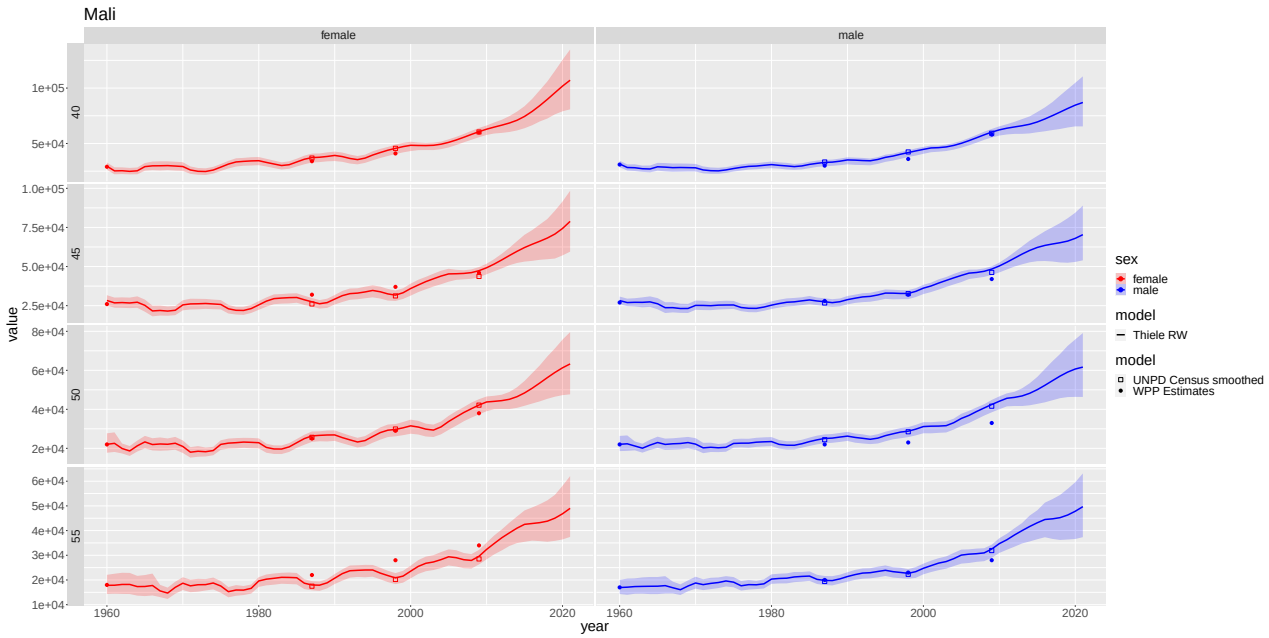

Figure 13: Population

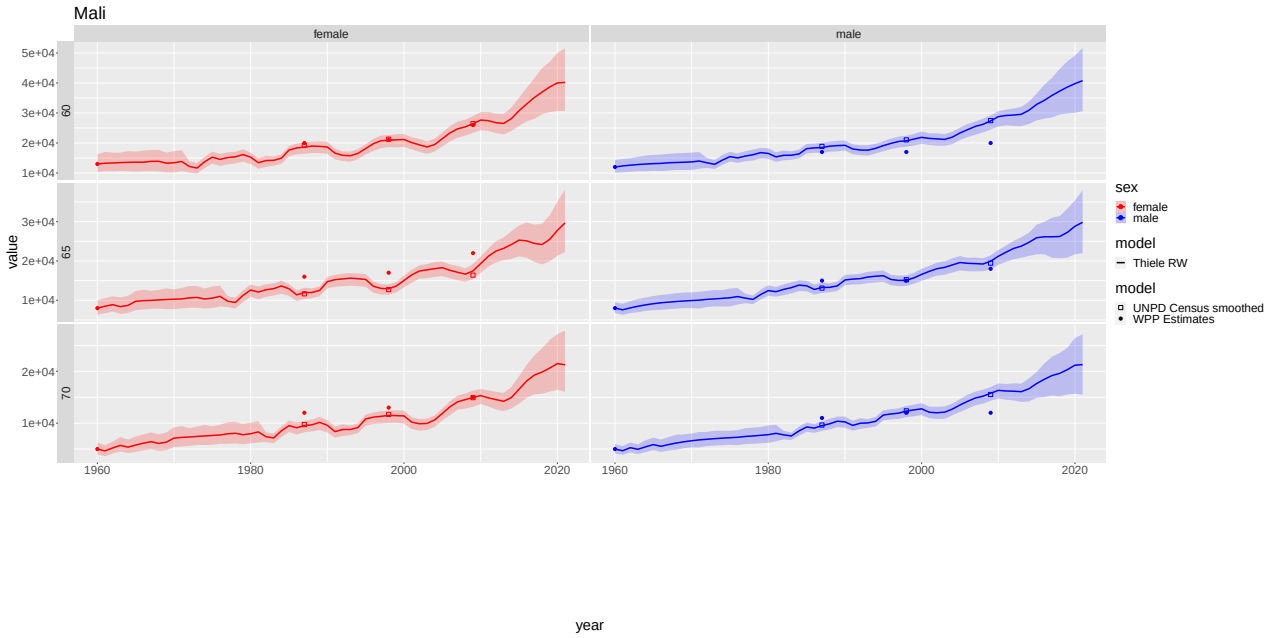

Figure 14: Population

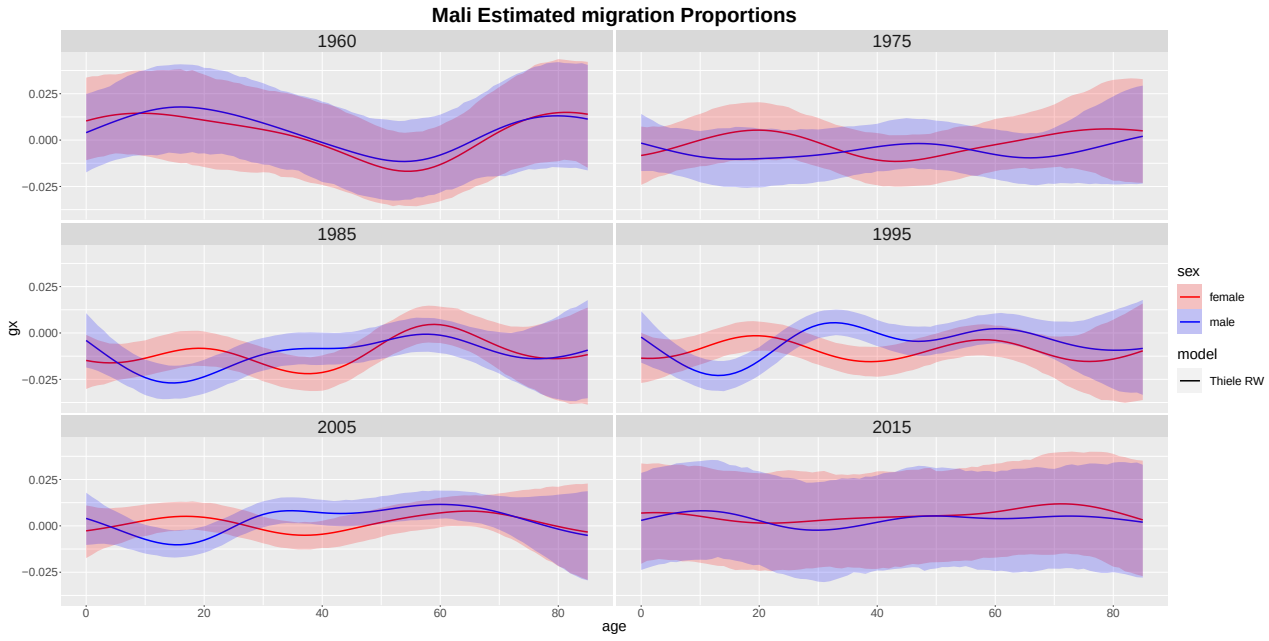

Figure 15: Migration

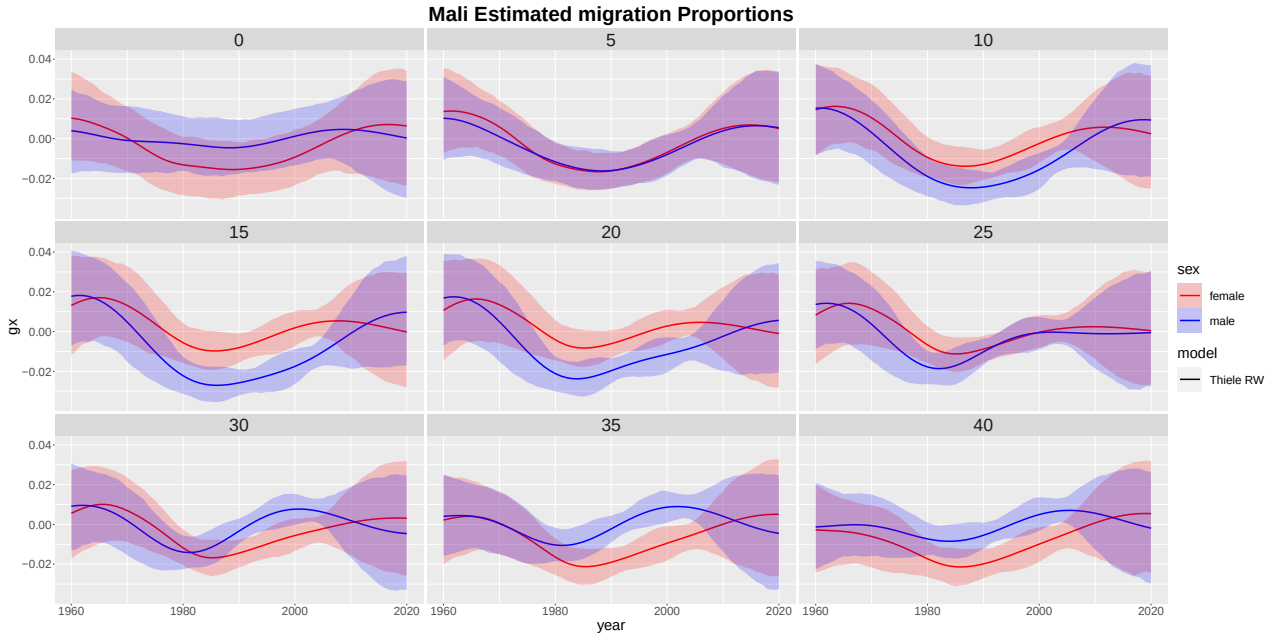

Figure 16: Migration

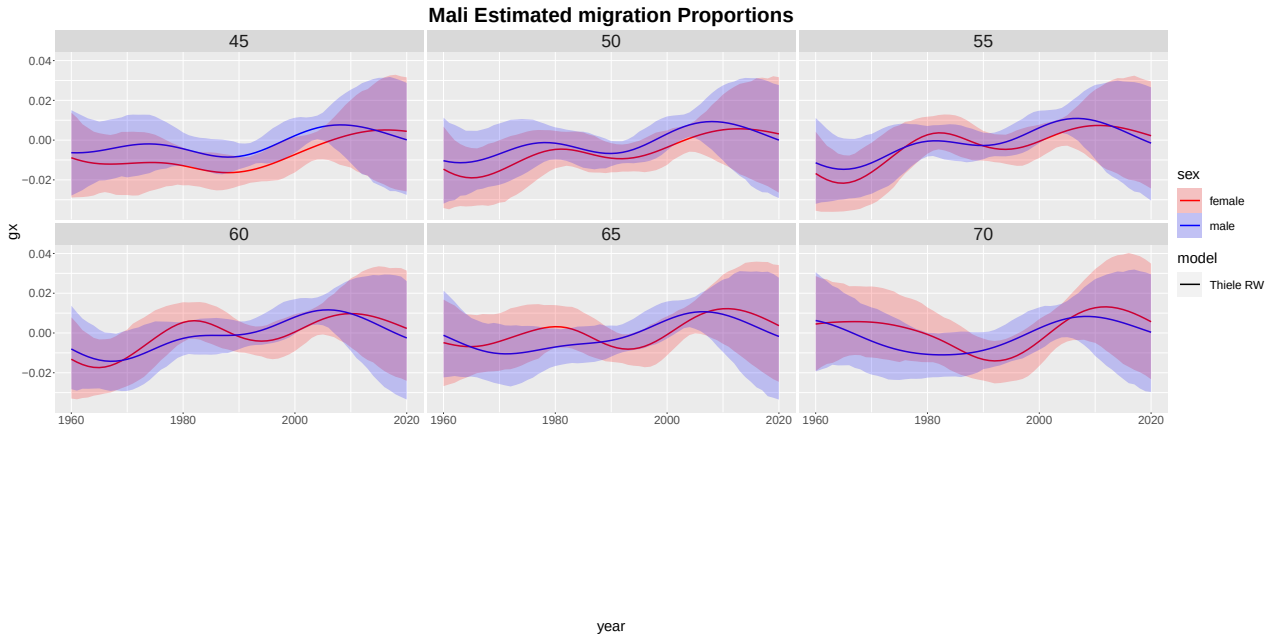

Figure 17: Migration

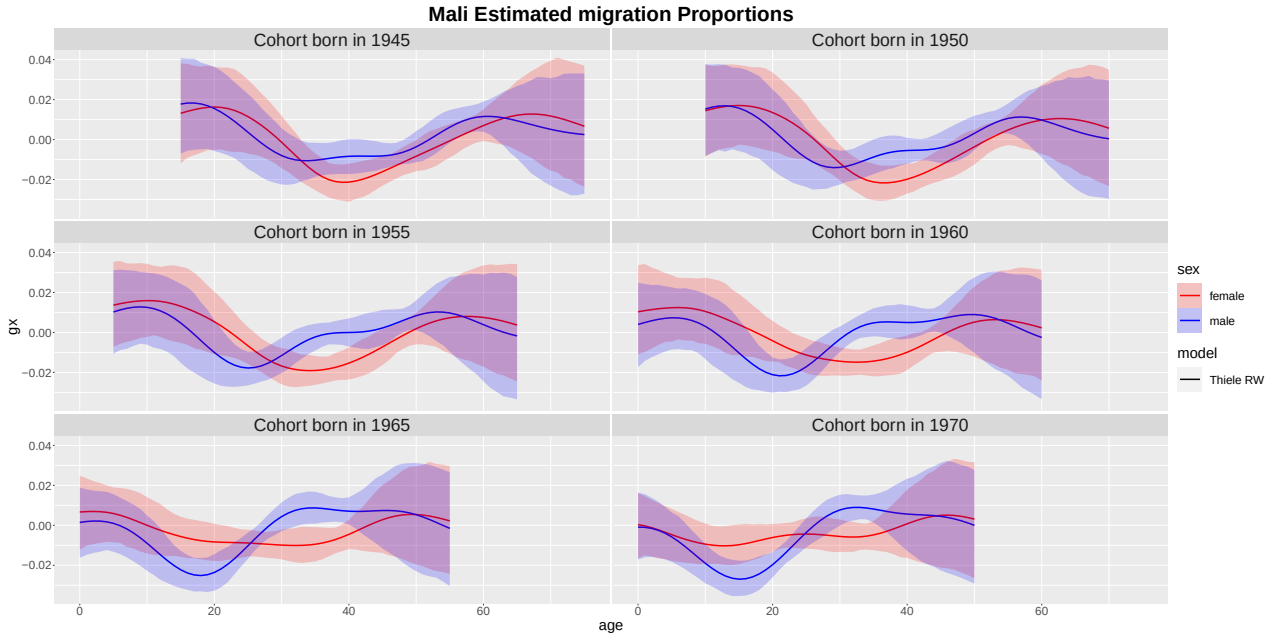

Figure 18: Migration

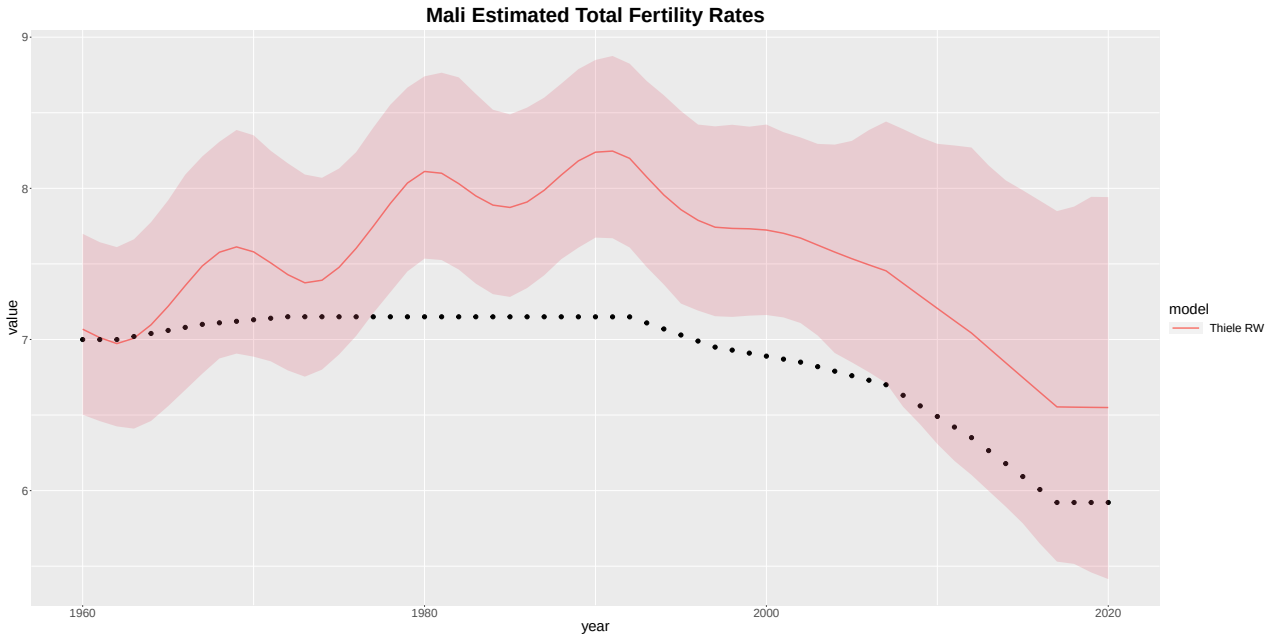

Figure 19: Total Fertility

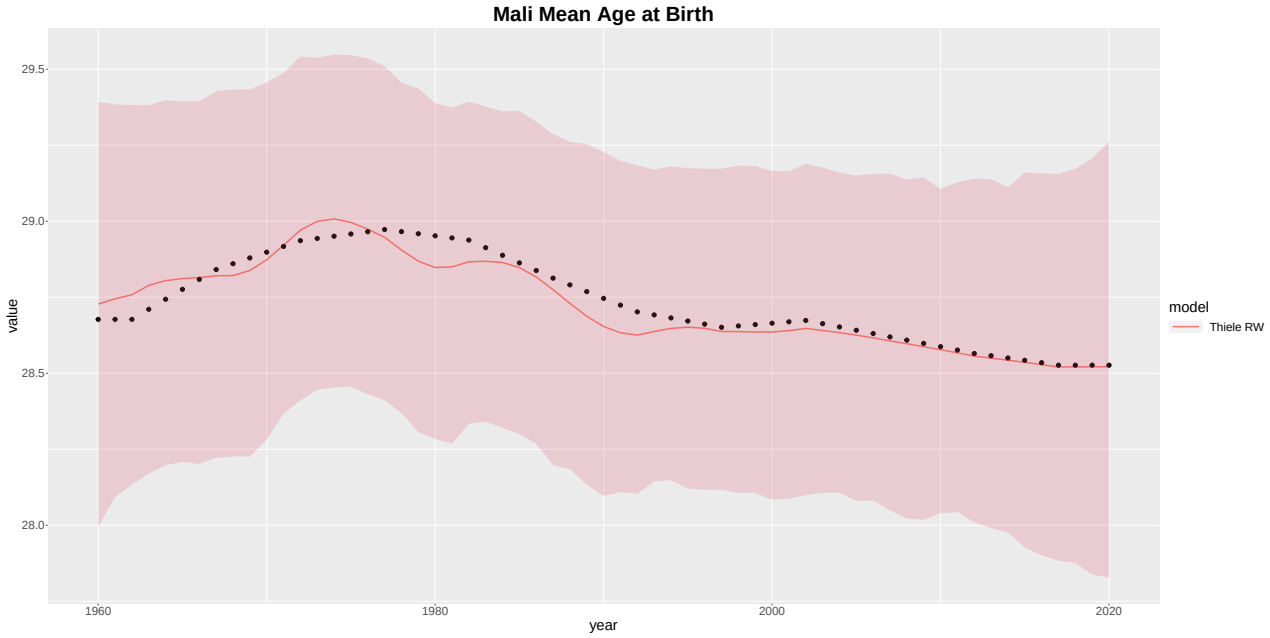

Figure 20: Mean age at births

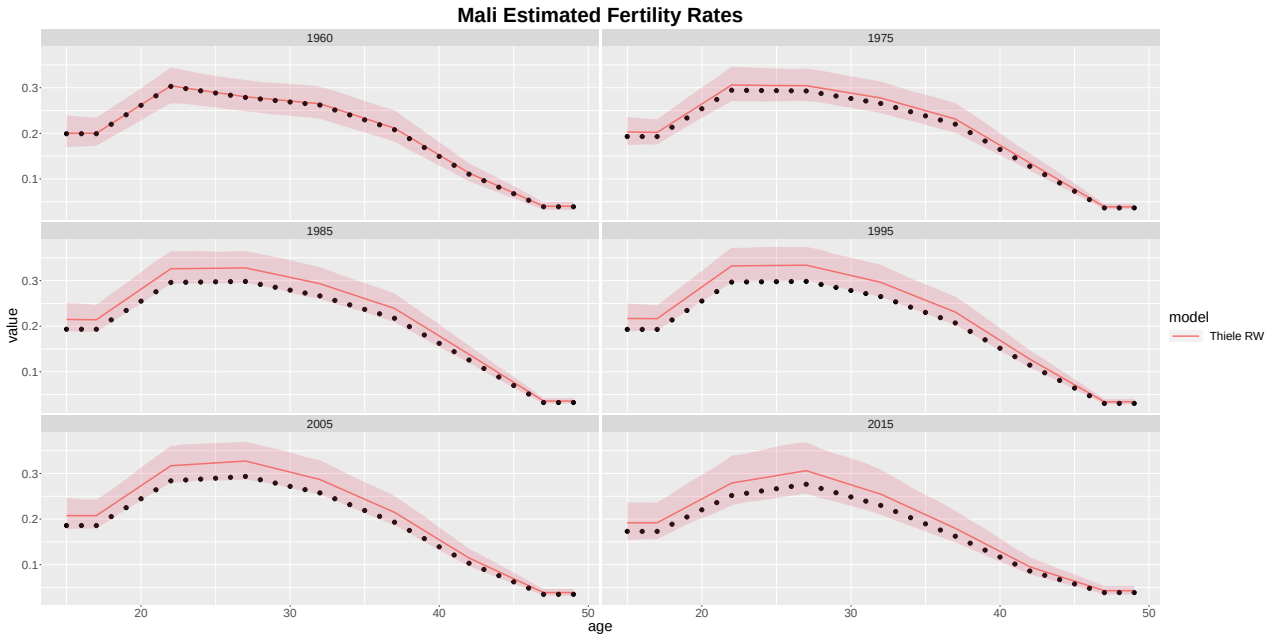

Figure 21: Fertility

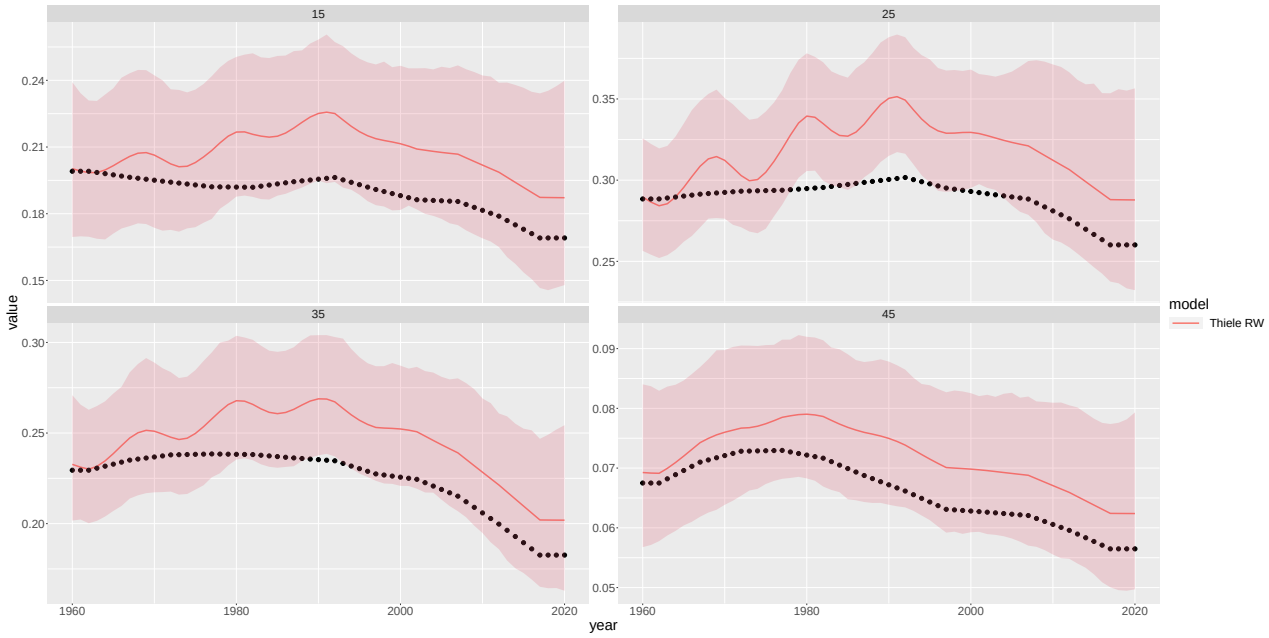

Figure 22: Fertility