

Liberia

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

```
## # A tibble: 18 x 5
```

```
##   aggr.age `1962` `1974` `1984` `2008`
## *   <dbl>   <dbl>   <dbl>   <dbl>   <dbl>
## 1      0 83757 112473 175096 263911
## 2      5 64953 101734. 148912. 242940.
## 3     10 52698. 86102. 124522. 212606.
## 4     15 47194. 77449. 113220. 190090.
## 5     20 47225. 71126. 102939. 174774.
## 6     25 47357 64640. 84985. 148747.
## 7     30 43429. 57040. 66985. 119966
## 8     35 36193. 45099. 53004 98793.
## 9     40 27916 33255. 40937. 76878.
## 10    45 20892 25422. 31991. 55524.
## 11    50 15643. 19339. 25344 39151.
## 12    55 12050. 14584 19994. 29099.
## 13    60 9246. 12546. 17390 25189
## 14    65 7298 9567 13581. 20468.
## 15    70 4358 5539 7838 14674
## 16    75 6865 8263 15661 10667
## 17    80    NA    NA    NA 6599
## 18    85    NA    NA    NA 8749
```

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

```
## # A tibble: 18 x 5
```

```
##   aggr.age `1962` `1974` `1984` `2008`
## *   <dbl>   <dbl>   <dbl>   <dbl>   <dbl>
## 1      0 81625 115252 175525 270564
## 2      5 68809 107996. 156238. 247061.
## 3     10 52433. 91310. 132812. 217634
## 4     15 43001. 73288 111146. 188906
## 5     20 38585. 59558. 93543. 163579.
## 6     25 37145. 52254. 78034. 137822.
## 7     30 36123. 48819. 63022. 113698.
## 8     35 33761. 44476 51116. 96817
## 9     40 29697. 37813. 42878 81576.
## 10    45 24926. 31391. 36068. 63548.
## 11    50 20001. 25404 29160. 46136.
## 12    55 15733. 20186 24042. 33073.
## 13    60 11897. 17028 21570. 25293.
## 14    65 8808 13044. 17269. 19079
## 15    70 4963 8855 11361 13879
## 16    75 8212 11788 21859 10228.
## 17    80    NA    NA    NA 5408
## 18    85    NA    NA    NA 8889
```

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
##      4.55    0.19    4.77
## [1] "false convergence (8)"
```

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

```
##      user  system elapsed
##     17.66    0.34   18.06
## [1] "relative convergence (4)"
```

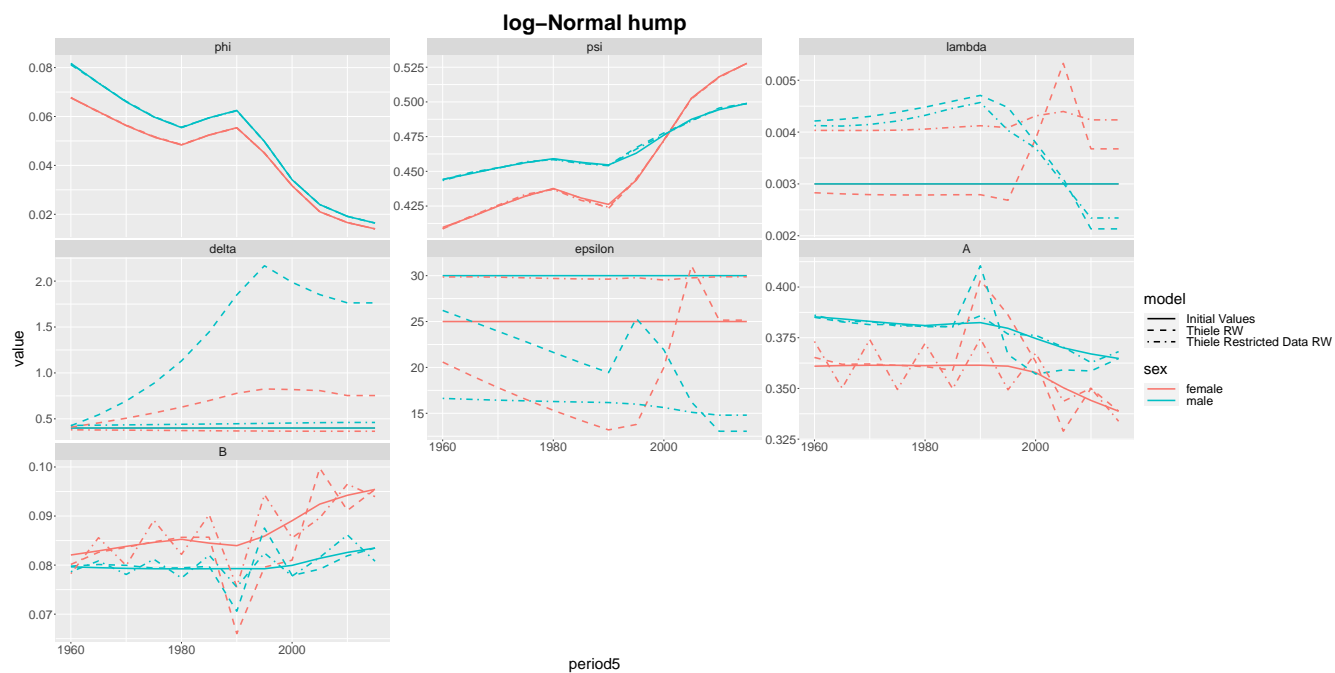


Figure 1: Estimated parameters



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

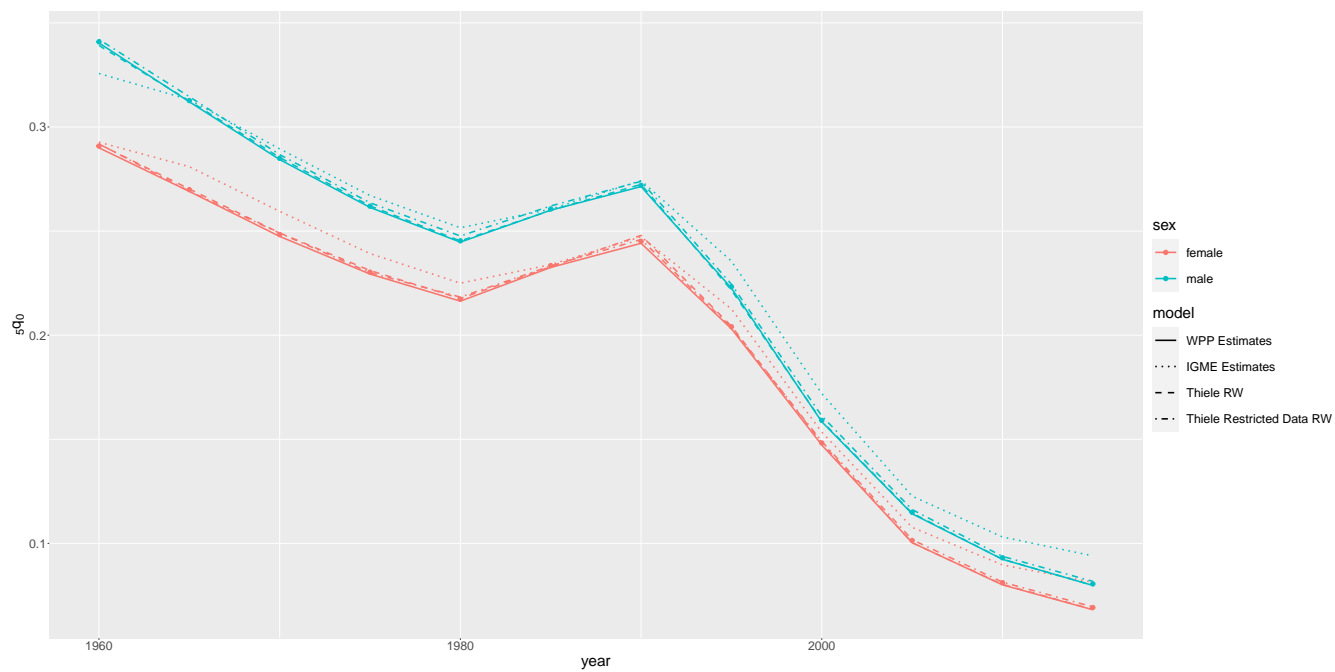


Figure 3: Estimated $_{5}q_0$

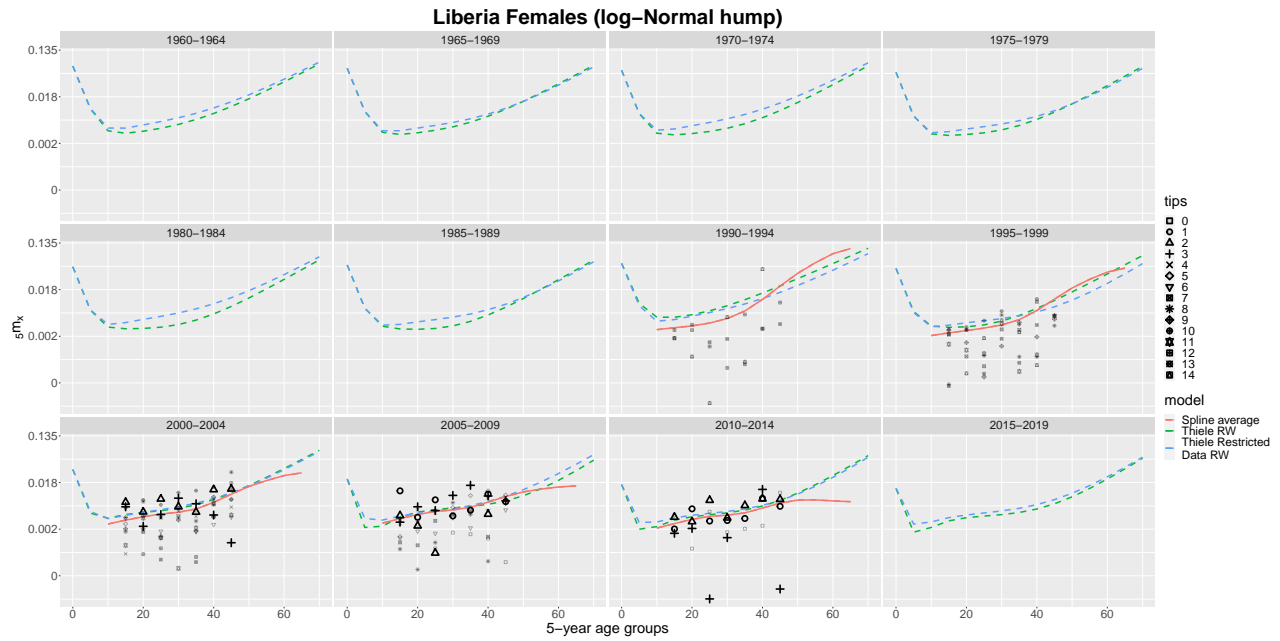


Figure 4: Mortality Schedules

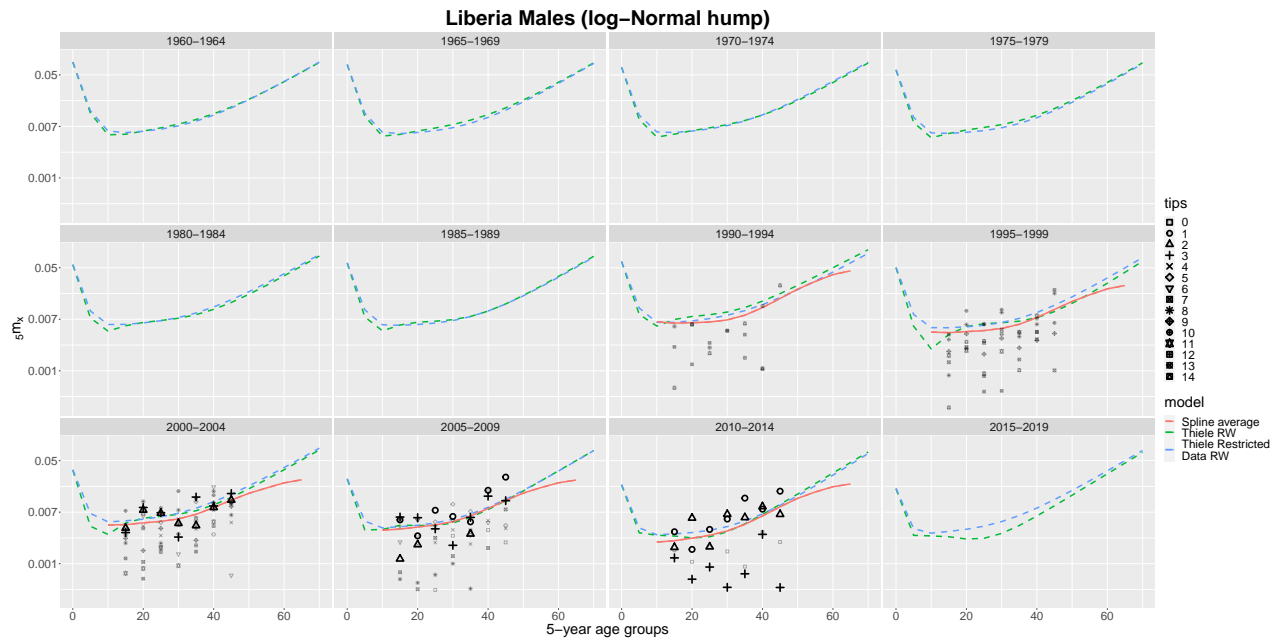


Figure 5: Mortality Schedules

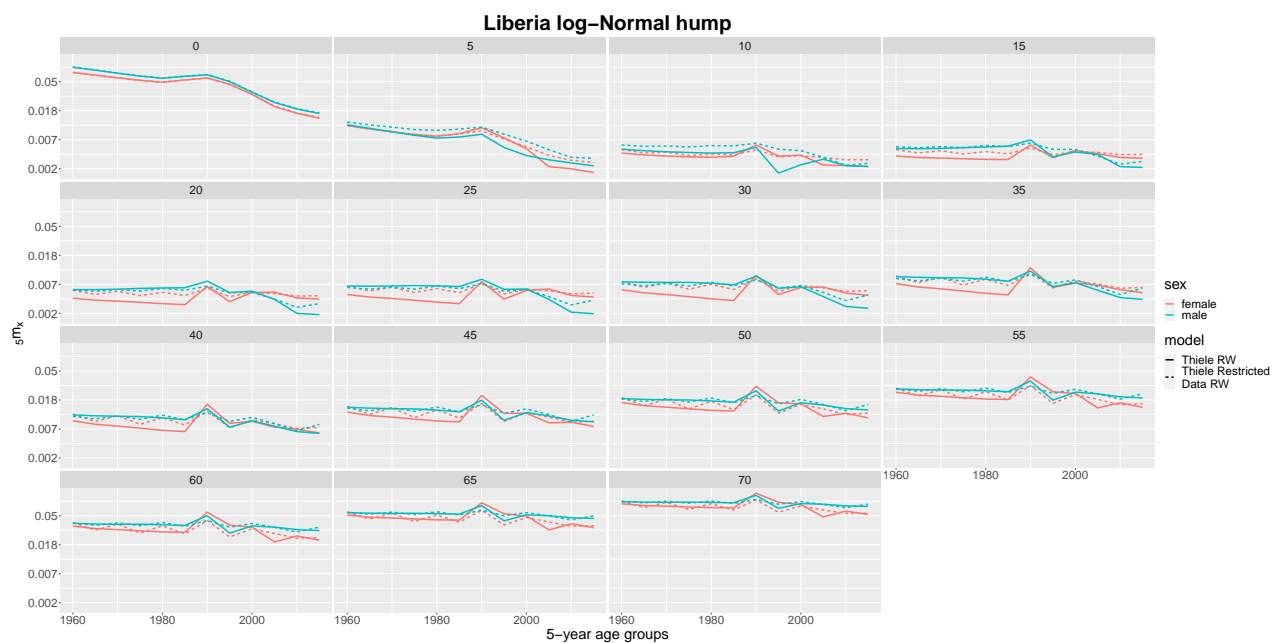


Figure 6: Mortality Schedules

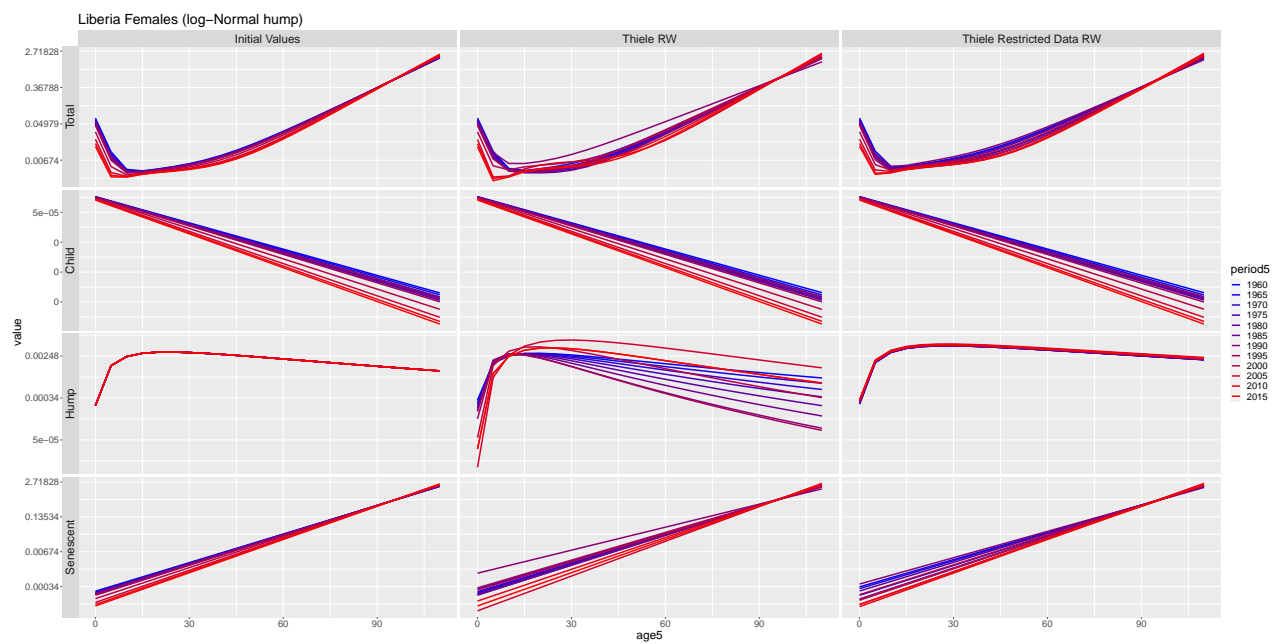


Figure 7: Thiele Decomposed

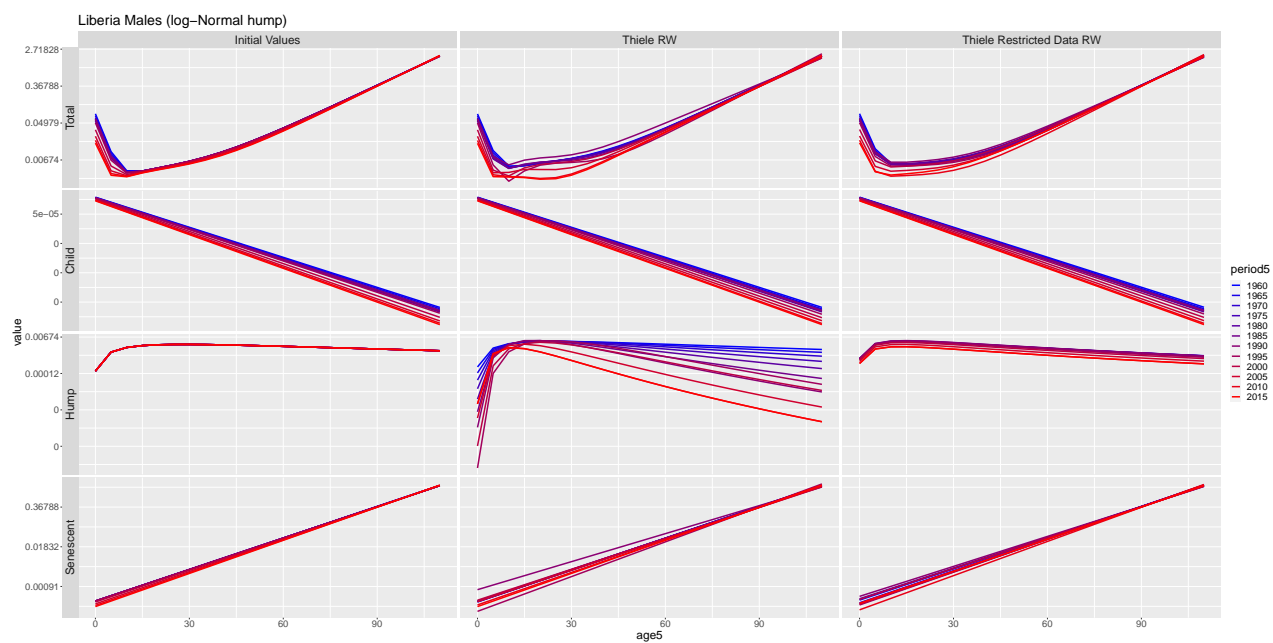


Figure 8: Thiele Decomposed

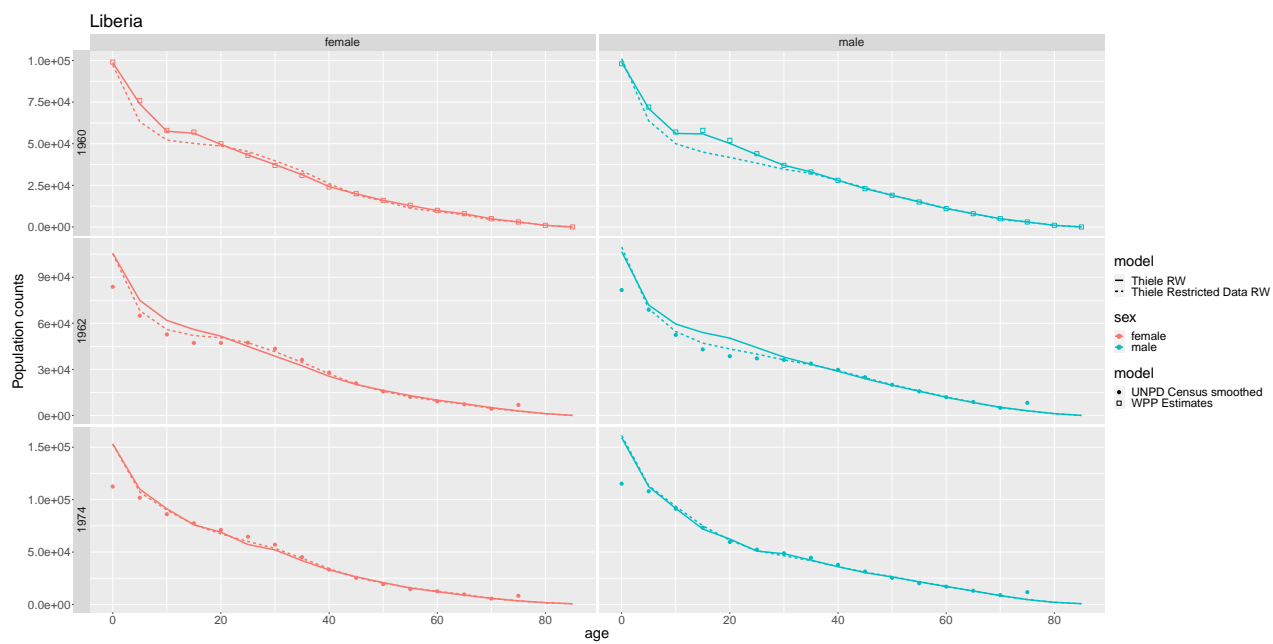


Figure 9: Population

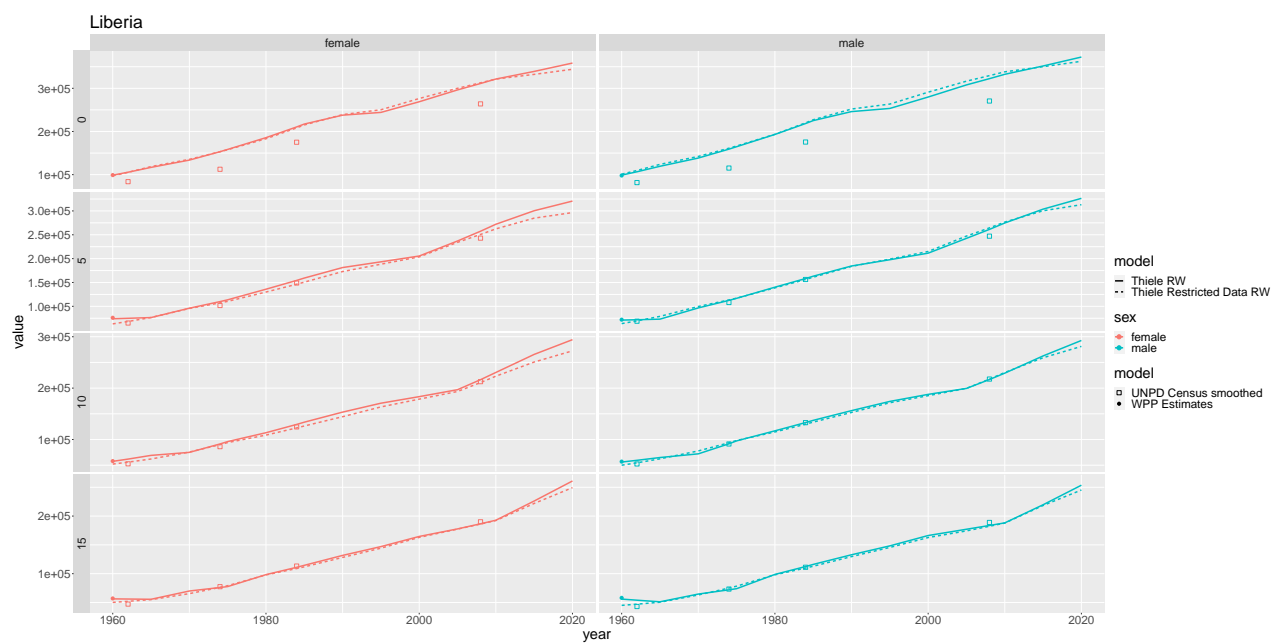


Figure 10: Population

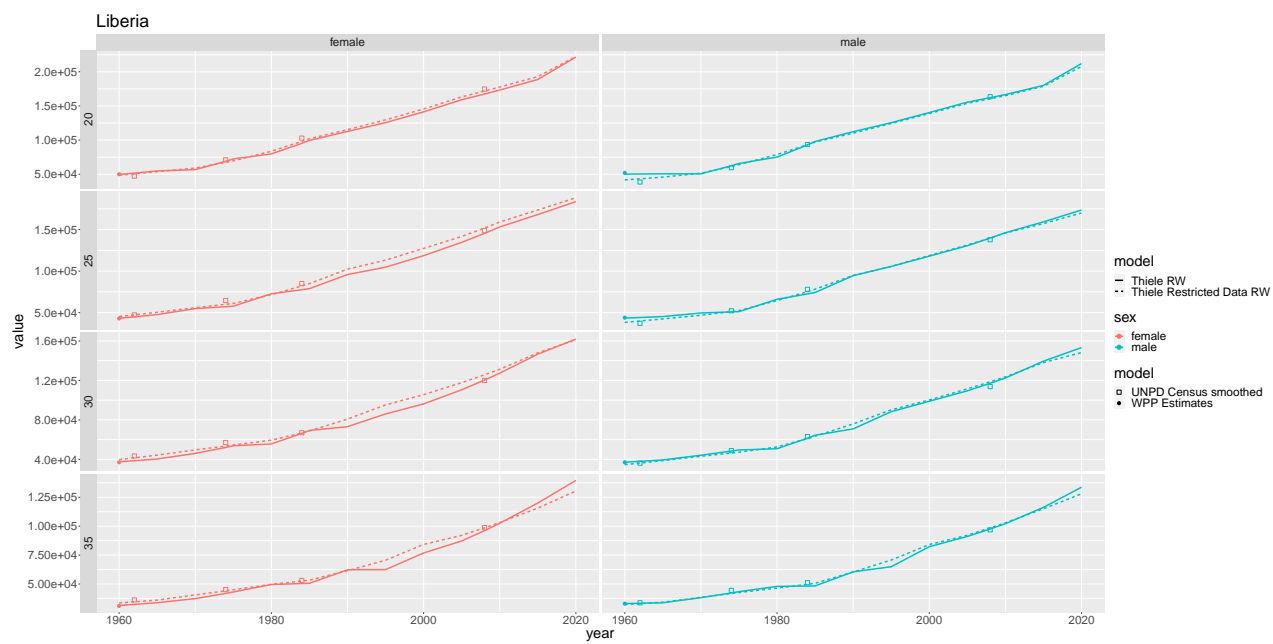


Figure 11: Population

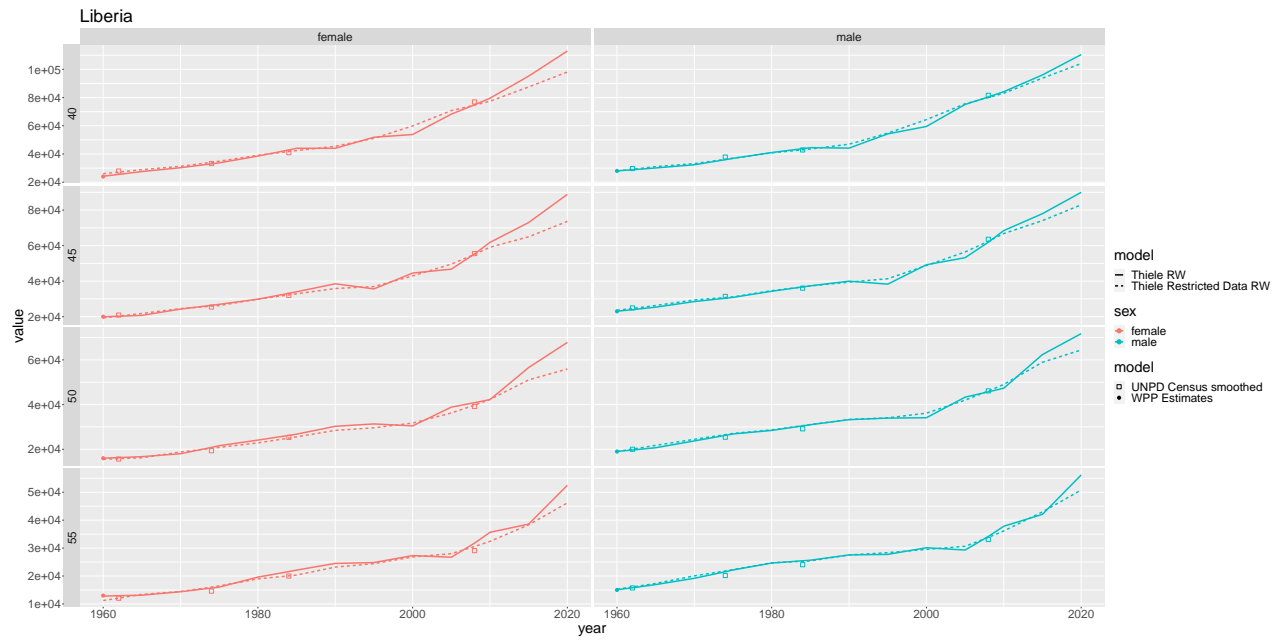


Figure 12: Population

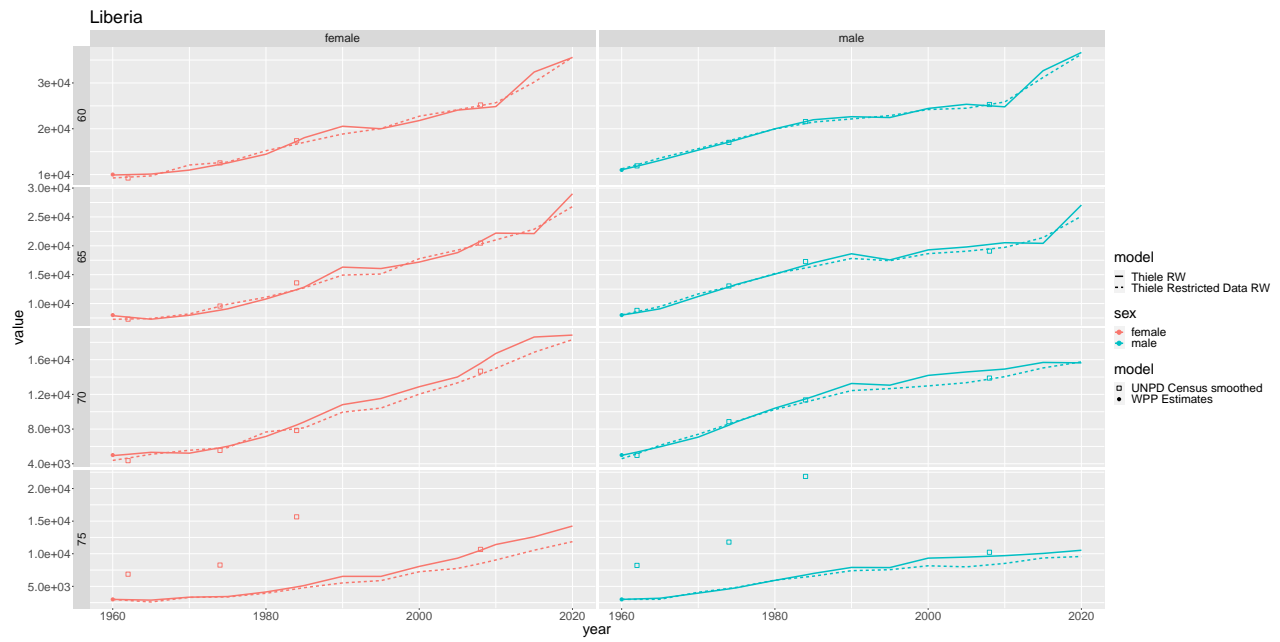


Figure 13: Population

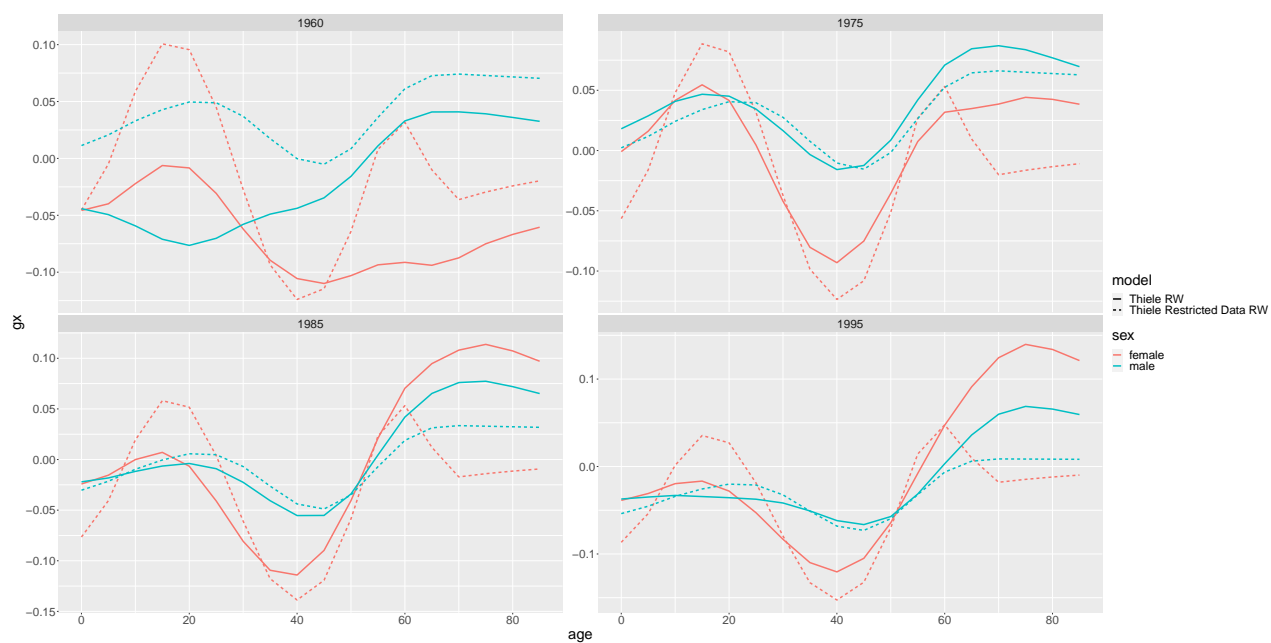


Figure 14: Migration

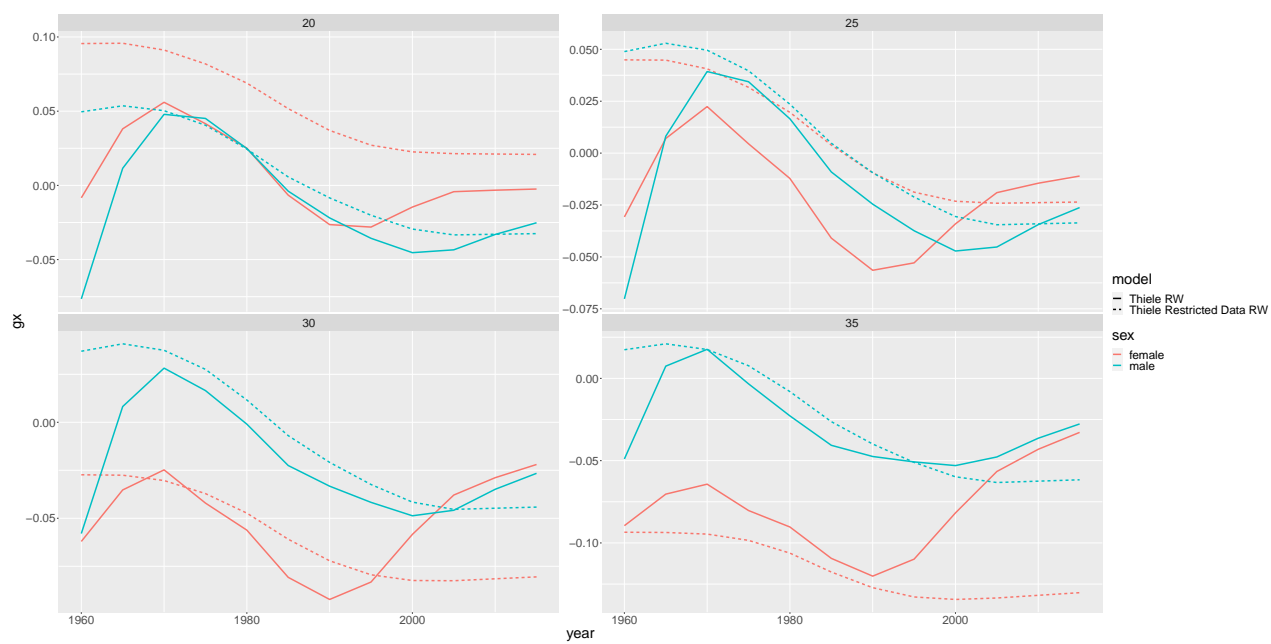


Figure 15: Migration

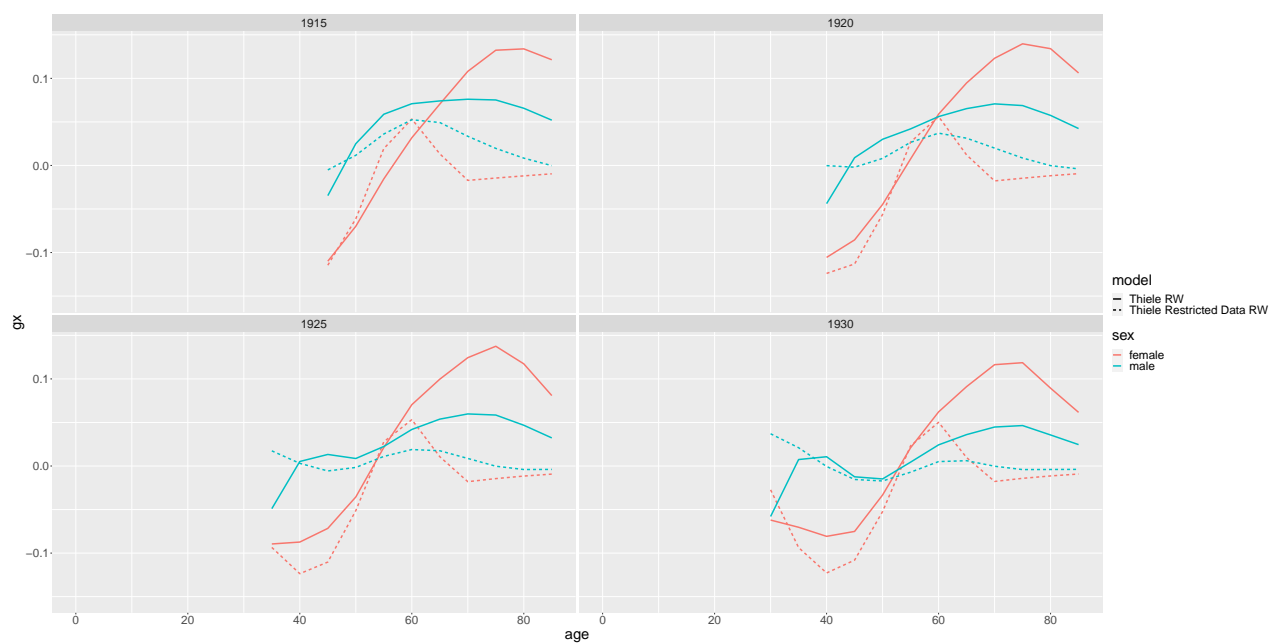


Figure 16: Migration

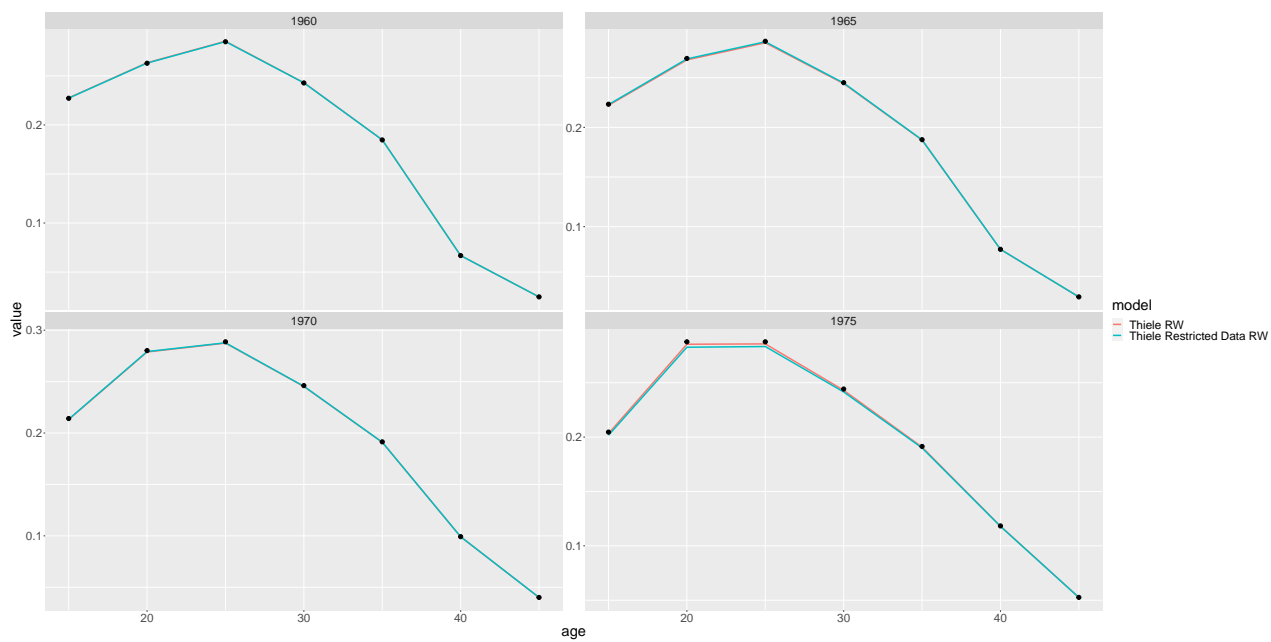


Figure 17: Fertility

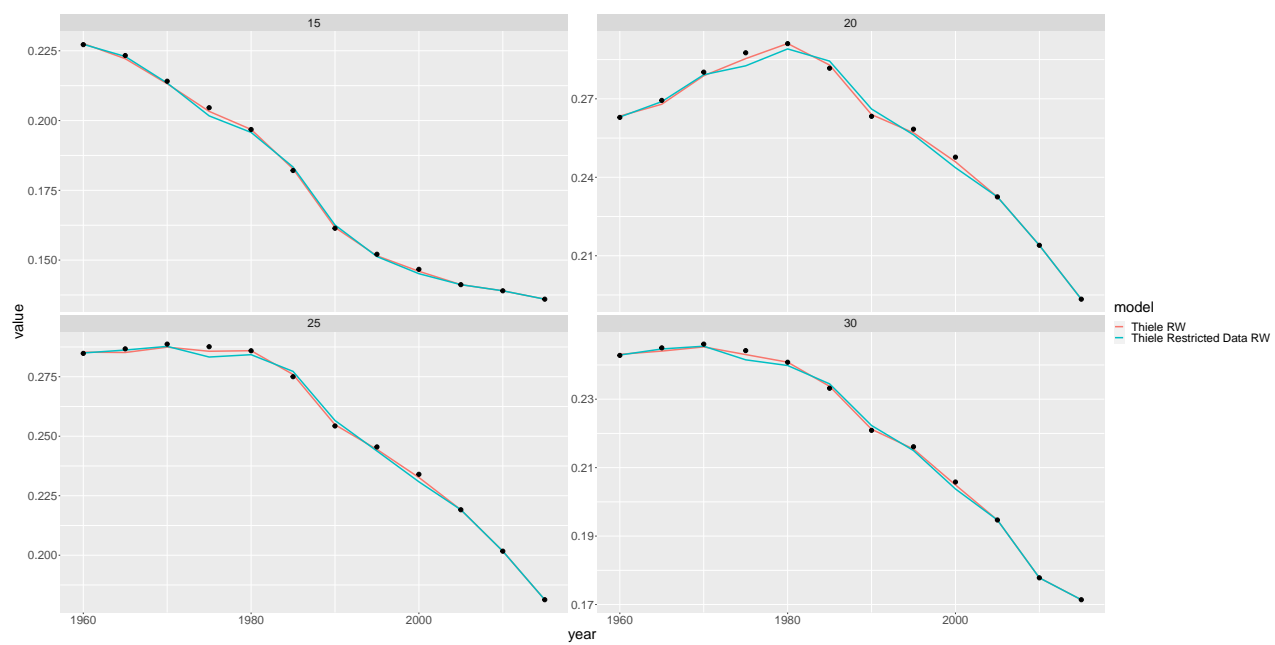


Figure 18: Fertility