

Liberia

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

## # A tibble: 86 x 3
##   age `1984` `2008`
##   <dbl> <dbl> <dbl>
## 1     0 37978 51687
## 2     1 30622. 46861.
## 3     2 34388. 52244.
## 4     3 35371 52801.
## 5     4 36102. 53520.
## 6     5 34495. 53987.
## 7     6 32424. 52555.
## 8     7 30881. 51036.
## 9     8 29514. 49024.
## 10    9 27417. 46864.
## # ... with 76 more rows

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

```
## # A tibble: 18 x 3
##   age `1962` `1974`
##   <dbl> <dbl> <dbl>
## 1     0 83757 112473
## 2     5 64953 101734.
## 3    10 52698. 86102.
## 4    15 47194. 77449.
## 5    20 47225. 71126.
## 6    25 47357 64640.
## 7    30 43429. 57040.
## 8    35 36193. 45099.
## 9    40 27916 33255.
## 10   45 20892 25422.
## 11   50 15643. 19339.
## 12   55 12050. 14584
## 13   60 9246. 12546.
## 14   65 7298 9567
## 15   70 4358 5539
## 16   75 6865 8263
## 17   80    NA    NA
## 18   85    NA    NA
```

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

## # A tibble: 86 x 3
##   age `1984` `2008`
##   <dbl> <dbl> <dbl>
## 1     0 39691 53291
## 2     1 30818. 49036.
## 3     2 34244 53494.
## 4     3 35267. 53886.
## 5     4 36443 54237.
## 6     5 35299. 54293.
```

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## 7      6 33519. 52831.
## 8      7 32027. 51569.
## 9      8 30936. 49706.
## 10     9 29228. 47837.
## # ... with 76 more rows
```

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

```
## # A tibble: 18 x 3
##   age `1962` `1974`
##   <dbl> <dbl> <dbl>
## 1      0 81625 115252
## 2      5 68809 107996.
## 3     10 52433. 91310.
## 4     15 43001. 73288
## 5     20 38585. 59558.
## 6     25 37145. 52254.
## 7     30 36123. 48819.
## 8     35 33761. 44476
## 9     40 29697. 37813.
## 10    45 24926. 31391.
## 11    50 20001. 25404
## 12    55 15733. 20186
## 13    60 11897. 17028
## 14    65 8808 13044.
## 15    70 4963 8855
## 16    75 8212 11788
## 17    80    NA    NA
## 18    85    NA    NA
```

Thiele log-Normal Hump Spline

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

##	log_tau2_logpop	log_tau2_logpop	log_tau2_logpop	log_tau2_logpop	log_lambda_fx	log
##	4.61992763	5.33597742	4.35359464	4.70991074	7.61653517	9
##	log_lambda_tp	tp_slope	tp_params_5	tp_params_10	log_lambda_phi	log
##	2.00077327	0.02859017	0.18964878	0.52927923	11.33426753	1
##	log_lambda_lambda	log_lambda_delta	log_lambda_epsilon			
##	4.44657315	8.52444738	6.79888078			

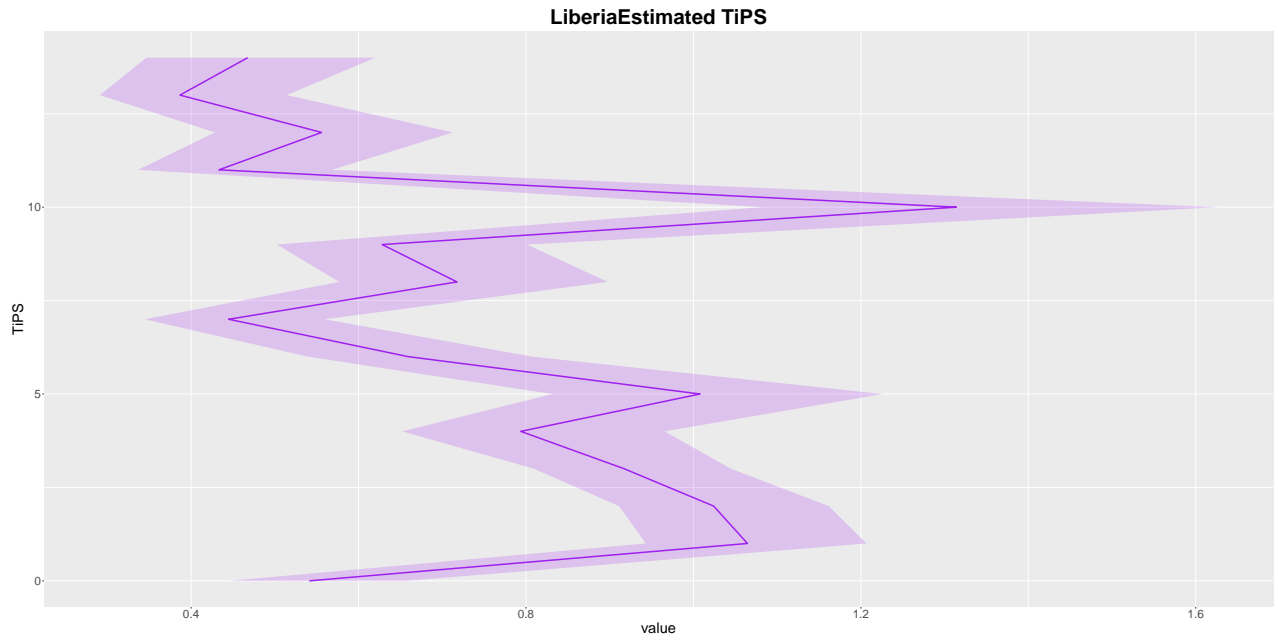


Figure 1: Estimated TiPS

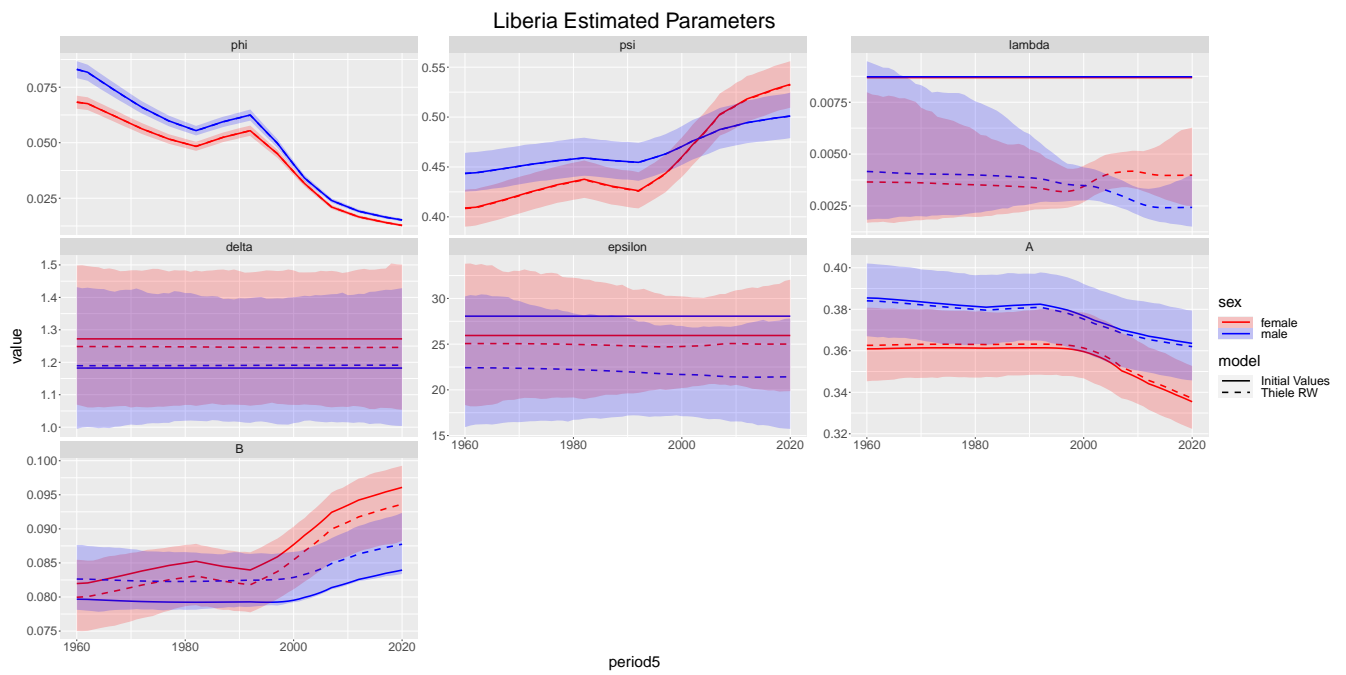


Figure 2: Estimated parameters

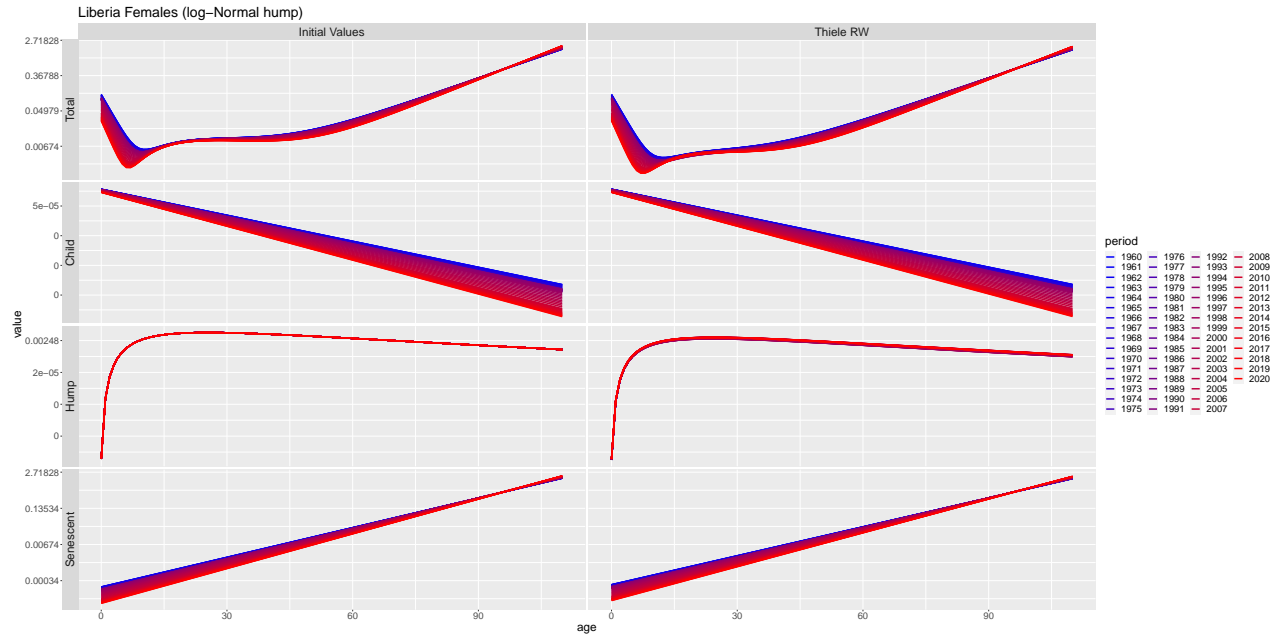


Figure 3: Thiele Decomposed

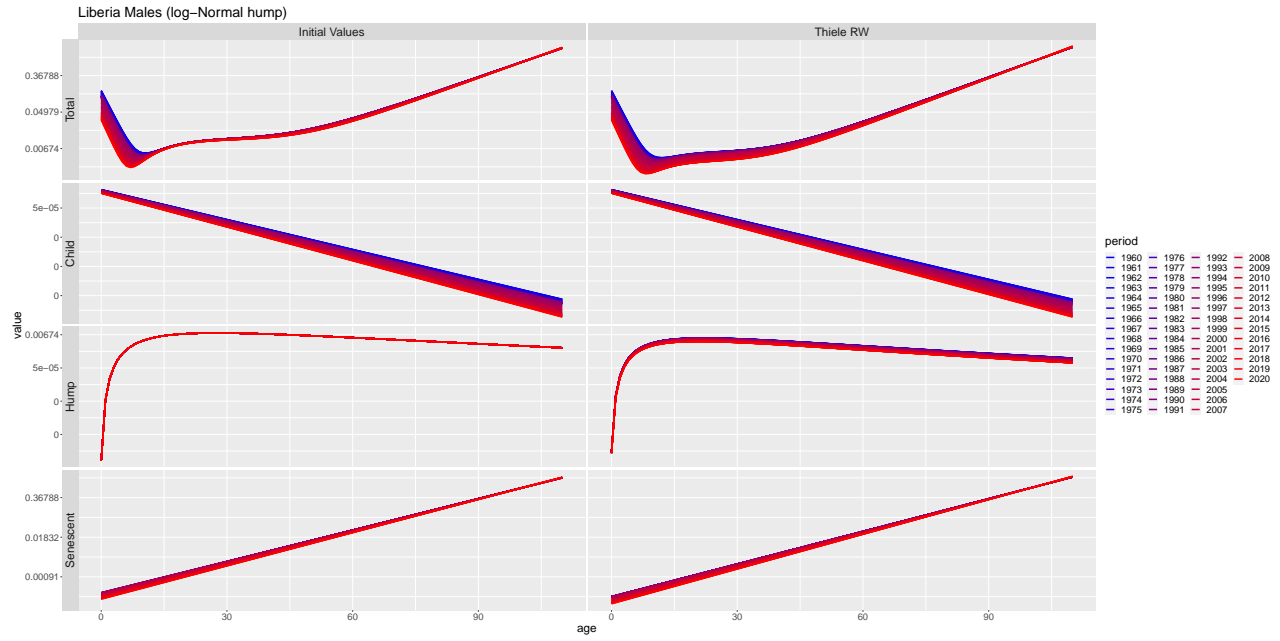


Figure 4: Thiele Decomposed

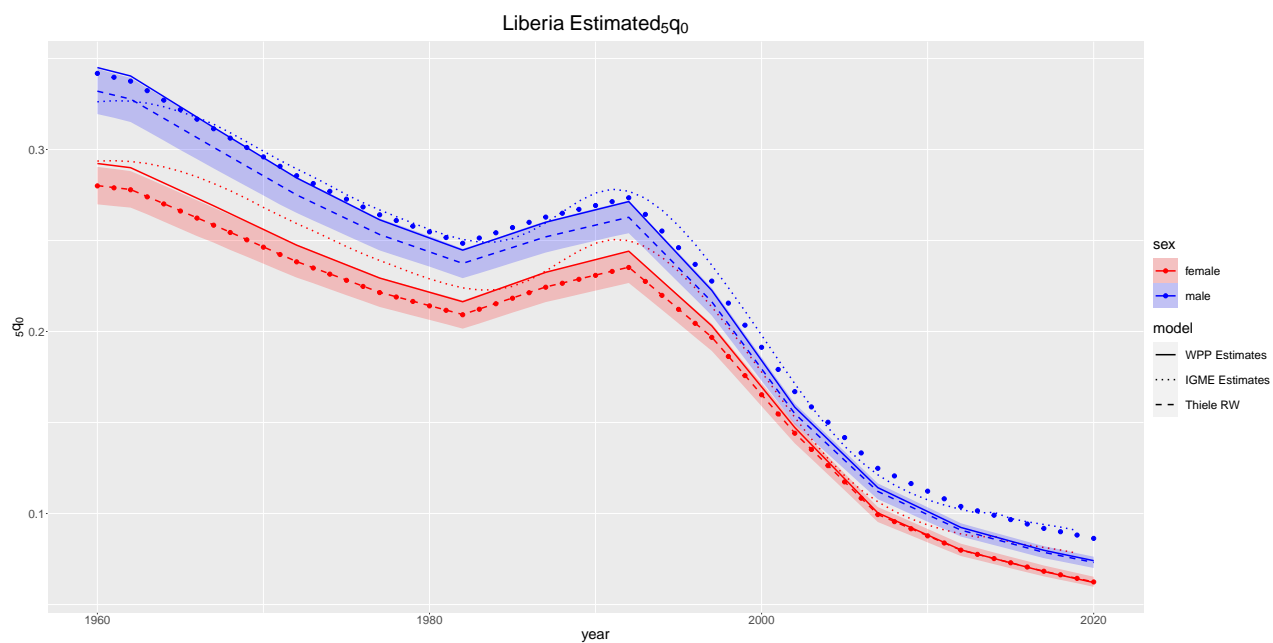


Figure 5: Estimated ${}_5q_0$

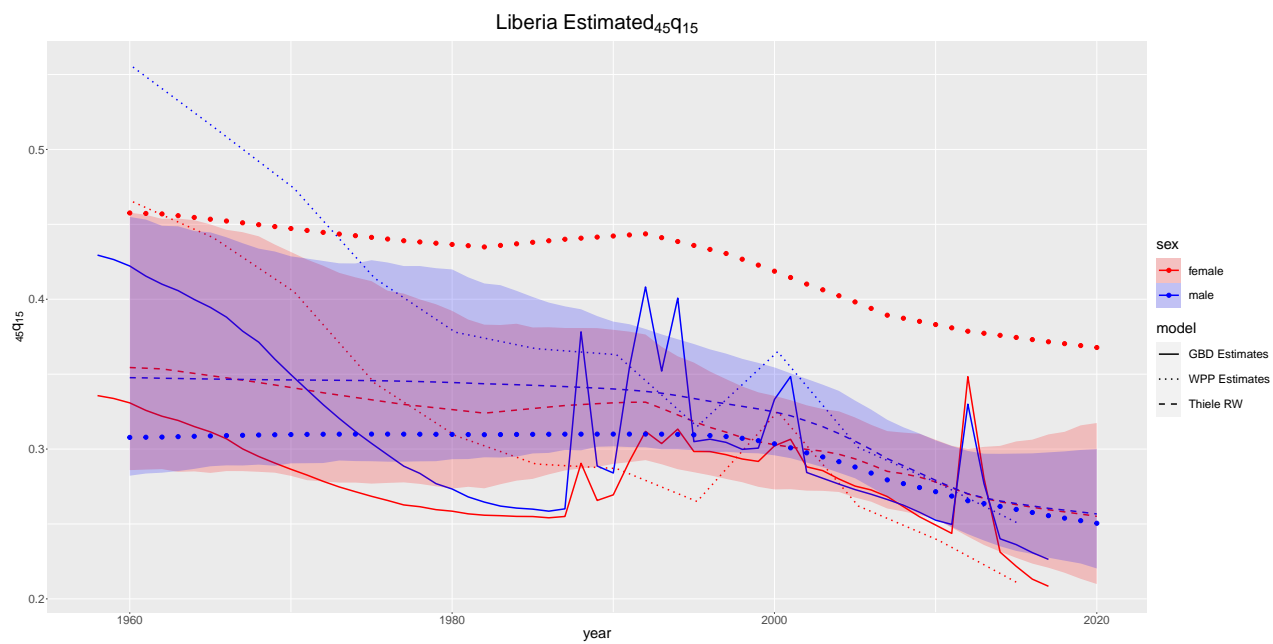


Figure 6: Estimated ${}_{45}q_{15}$

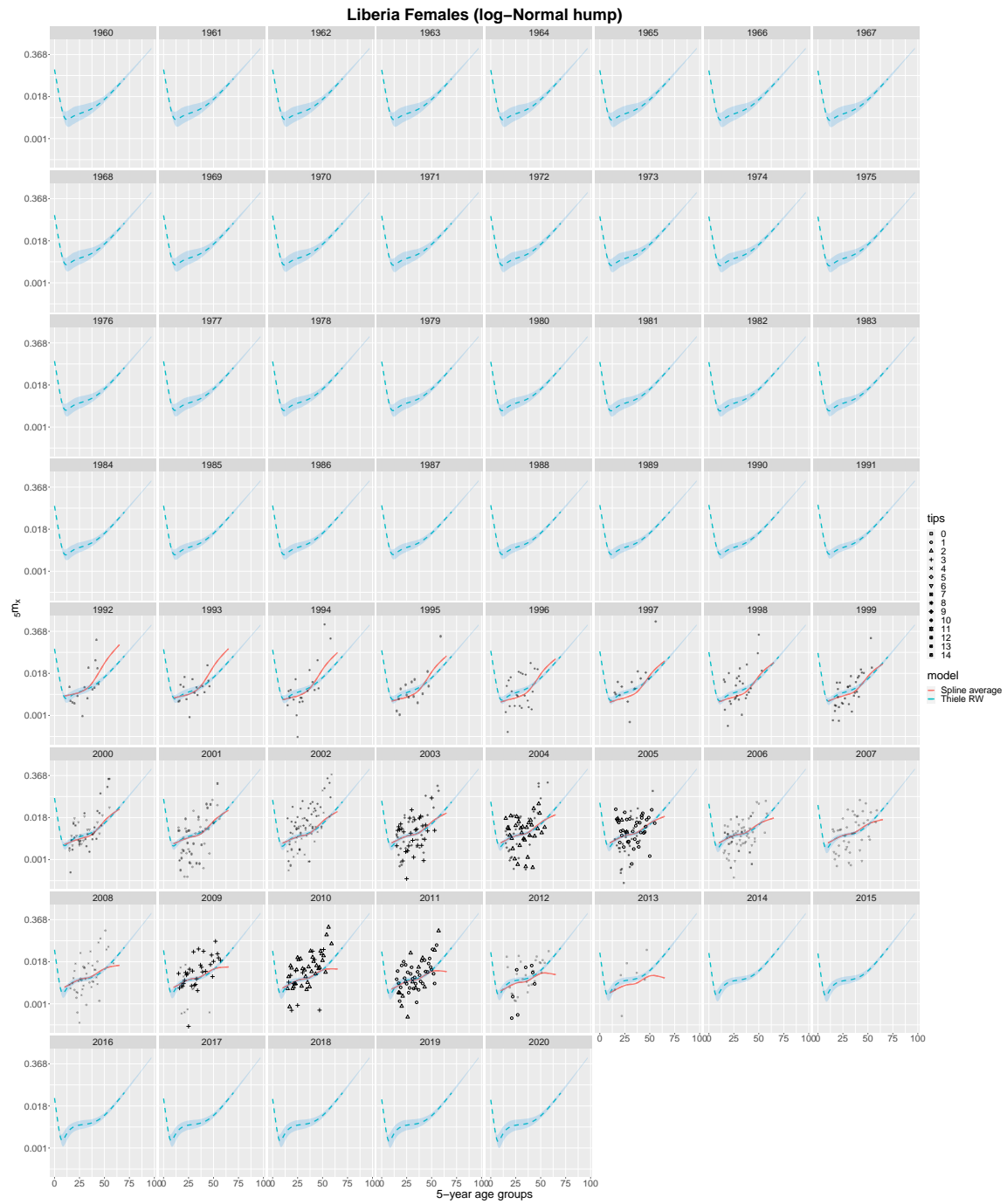


Figure 7: Mortality Schedules

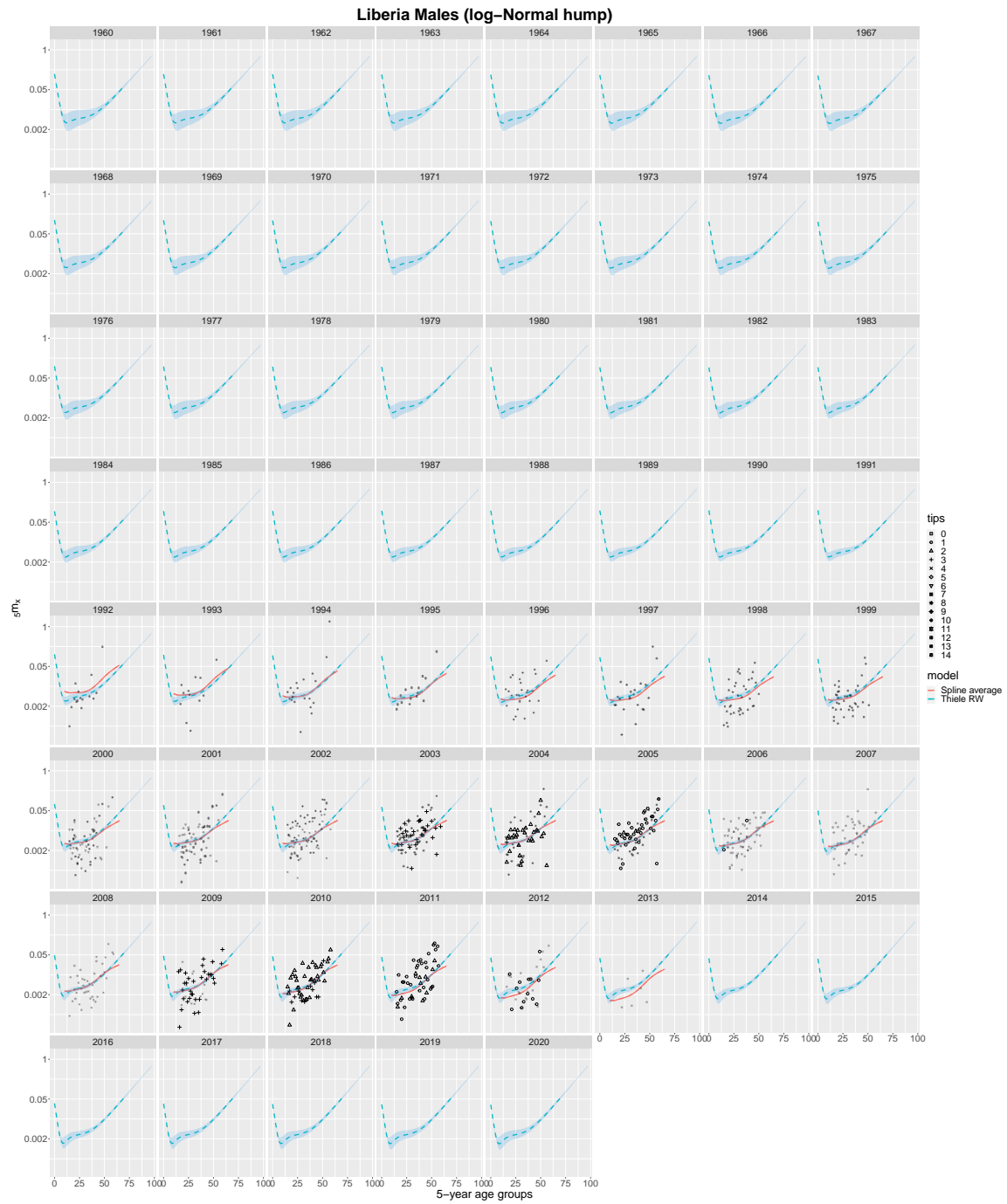


Figure 8: Mortality Schedules

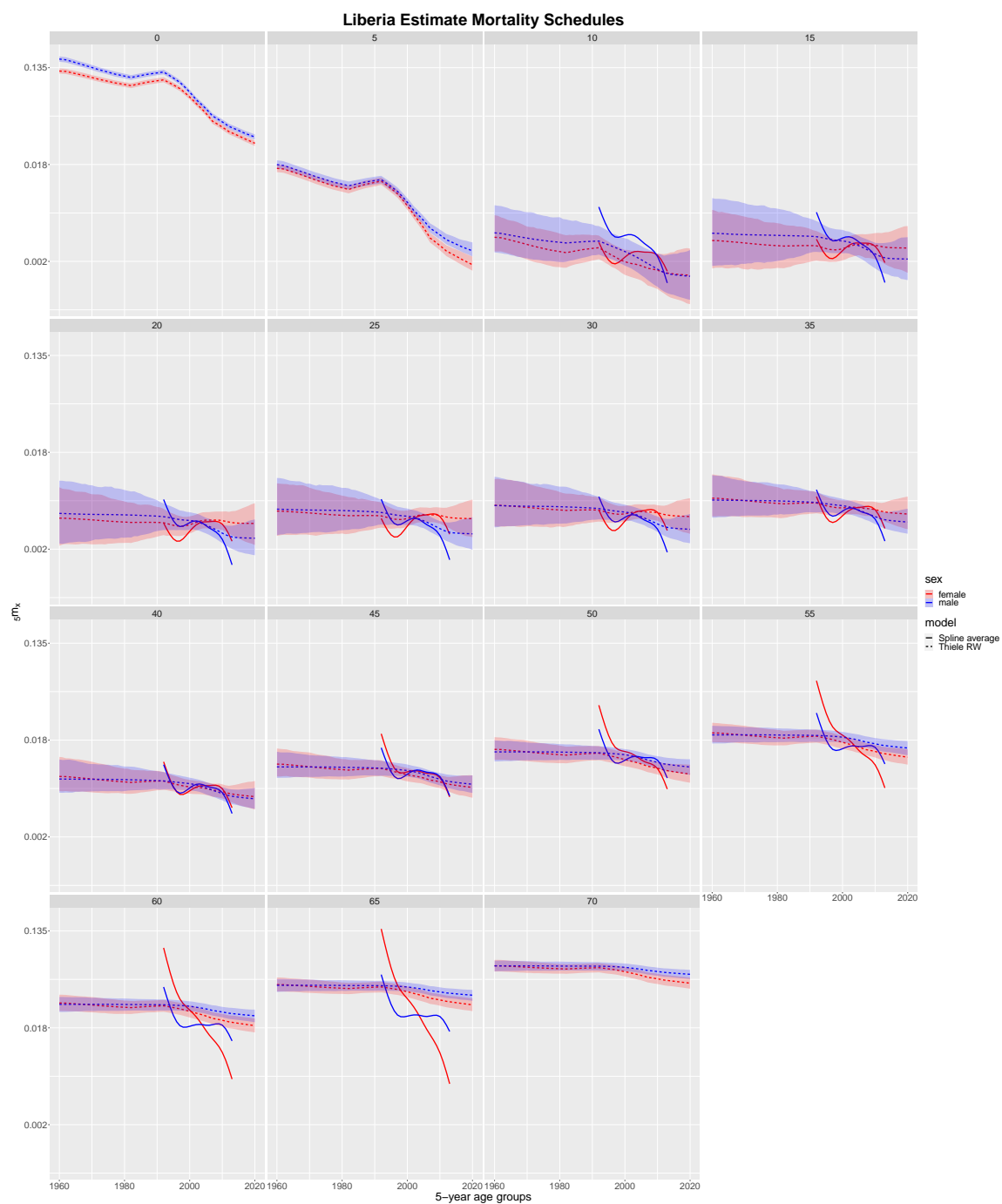


Figure 9: Mortality Schedules

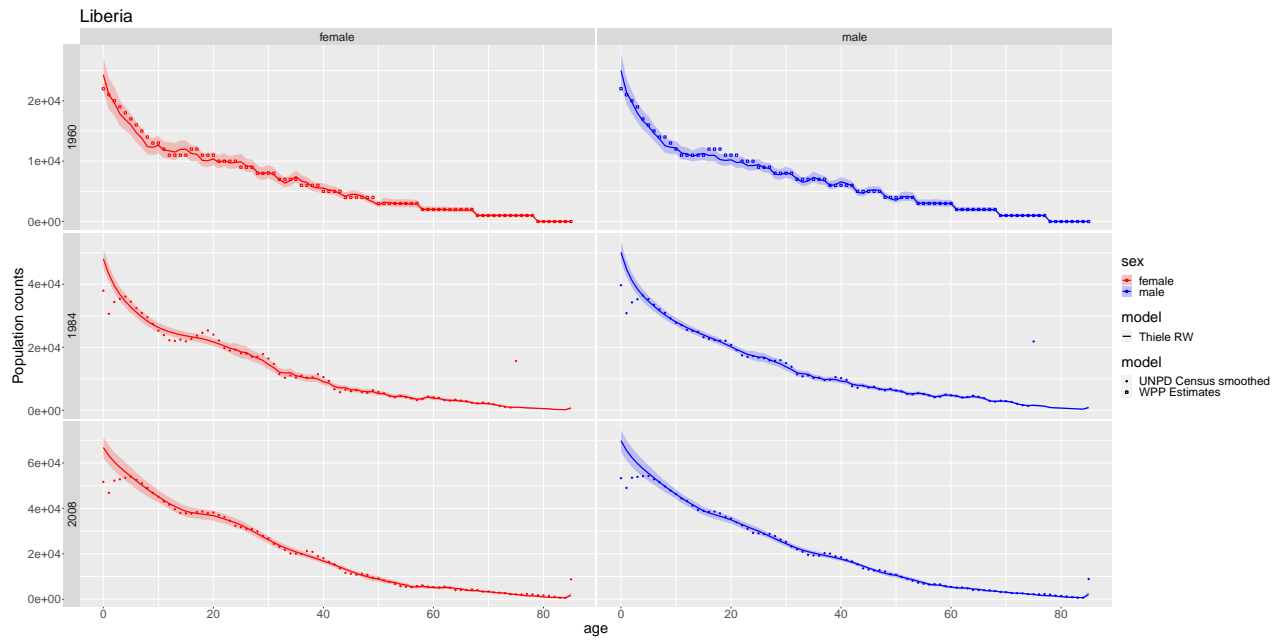


Figure 10: Population

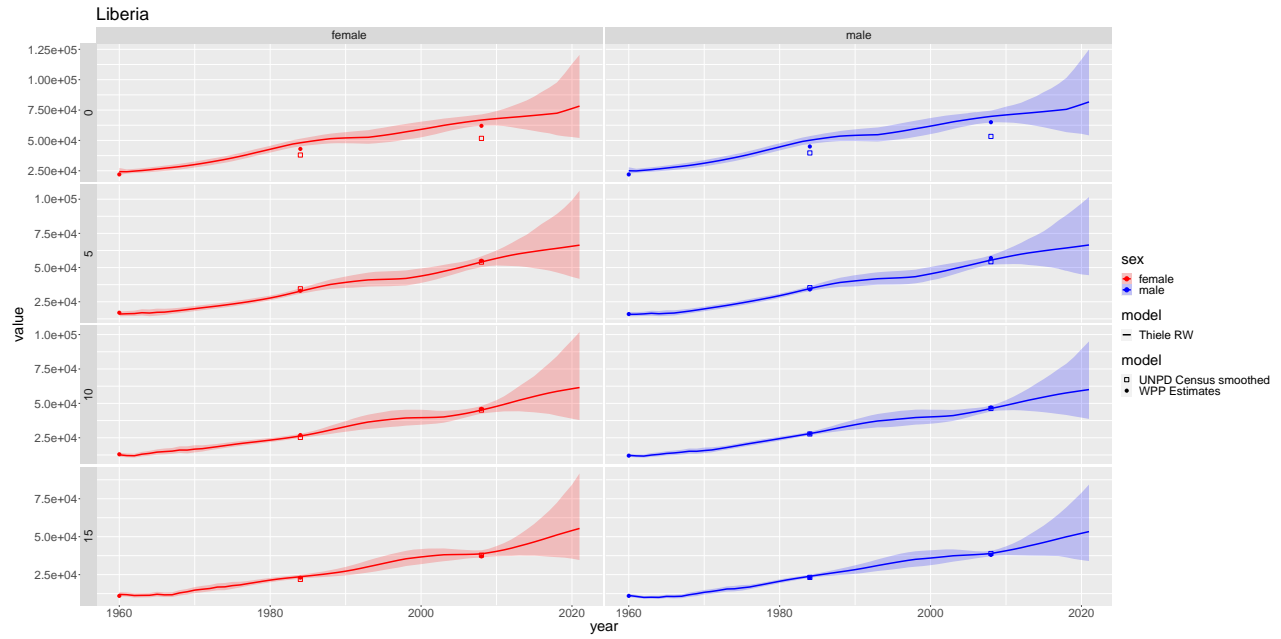


Figure 11: Population



Figure 12: Population

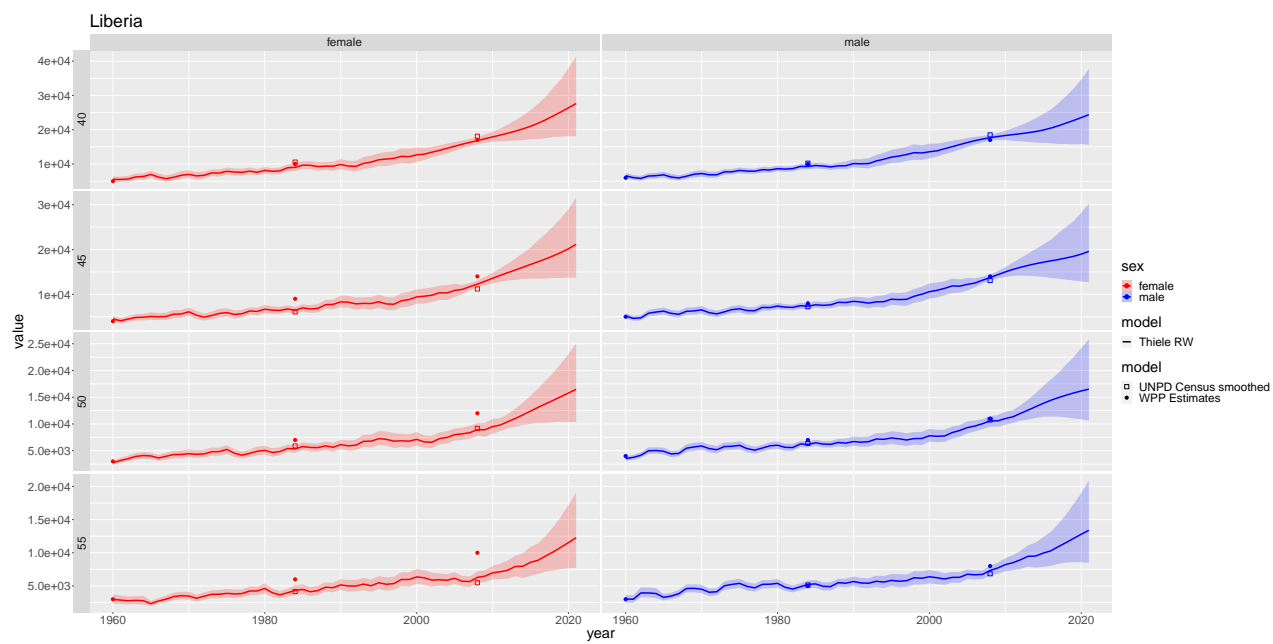


Figure 13: Population



Figure 14: Population

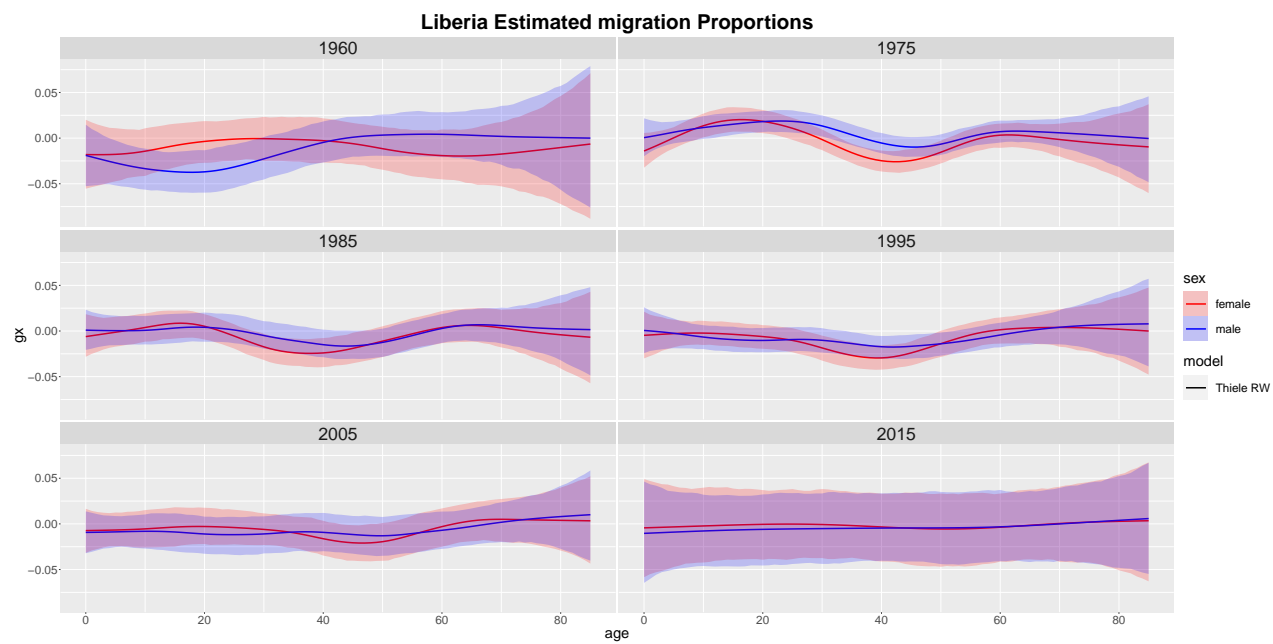


Figure 15: Migration

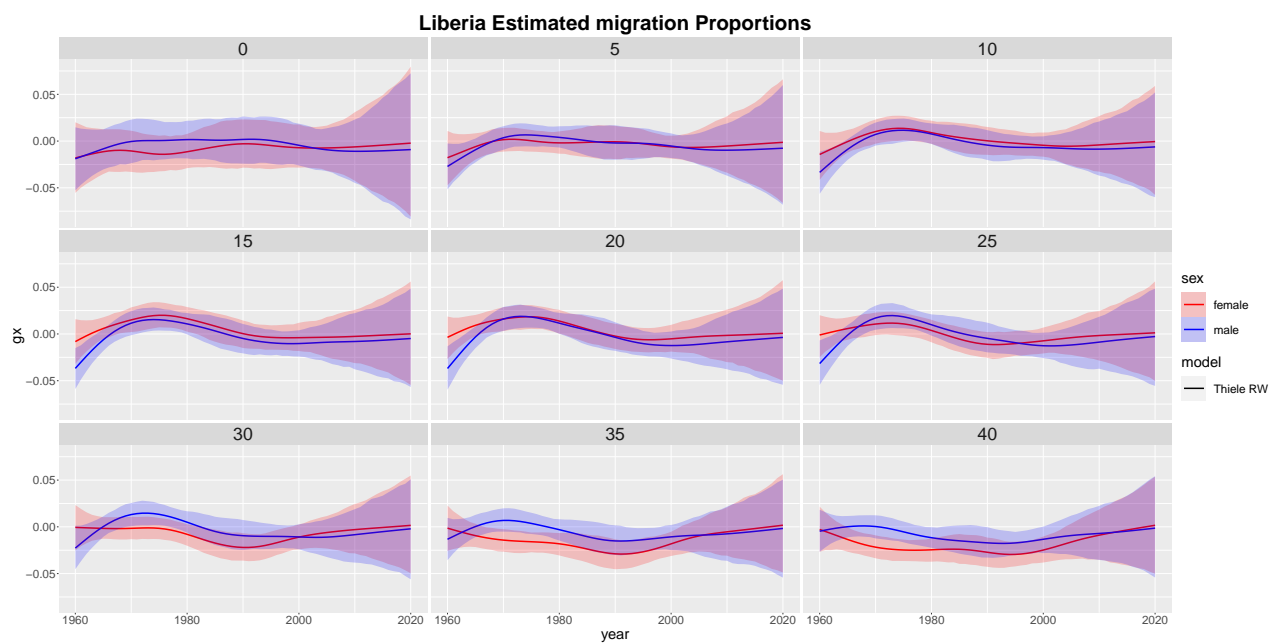


Figure 16: Migration

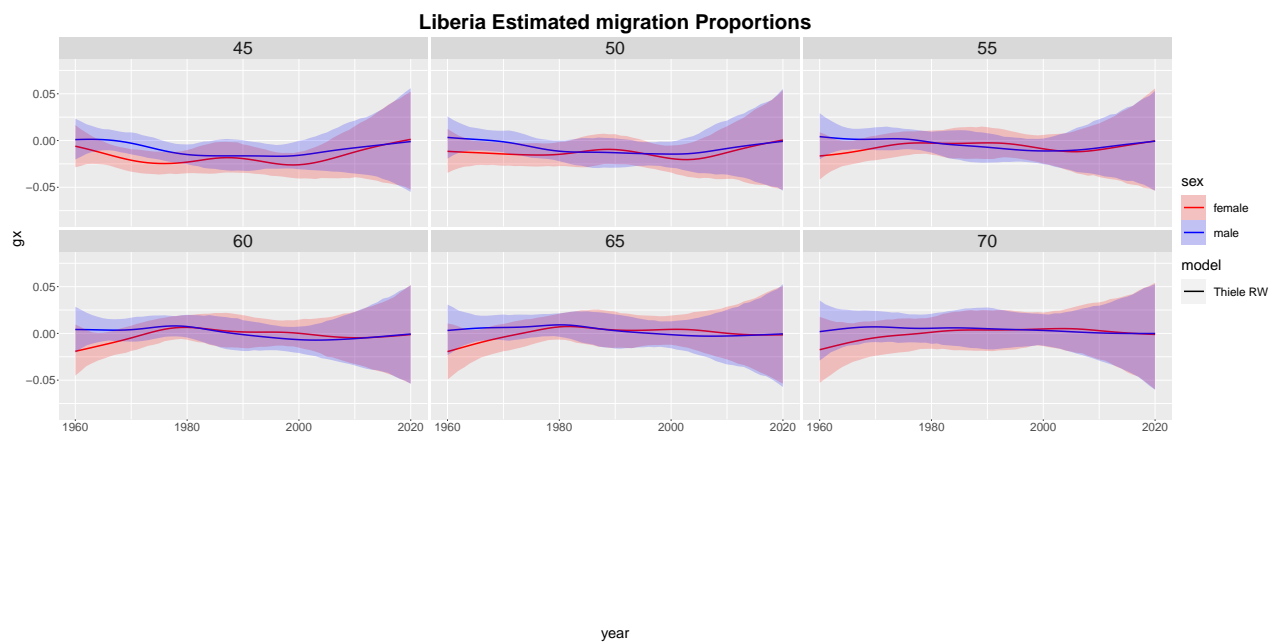


Figure 17: Migration

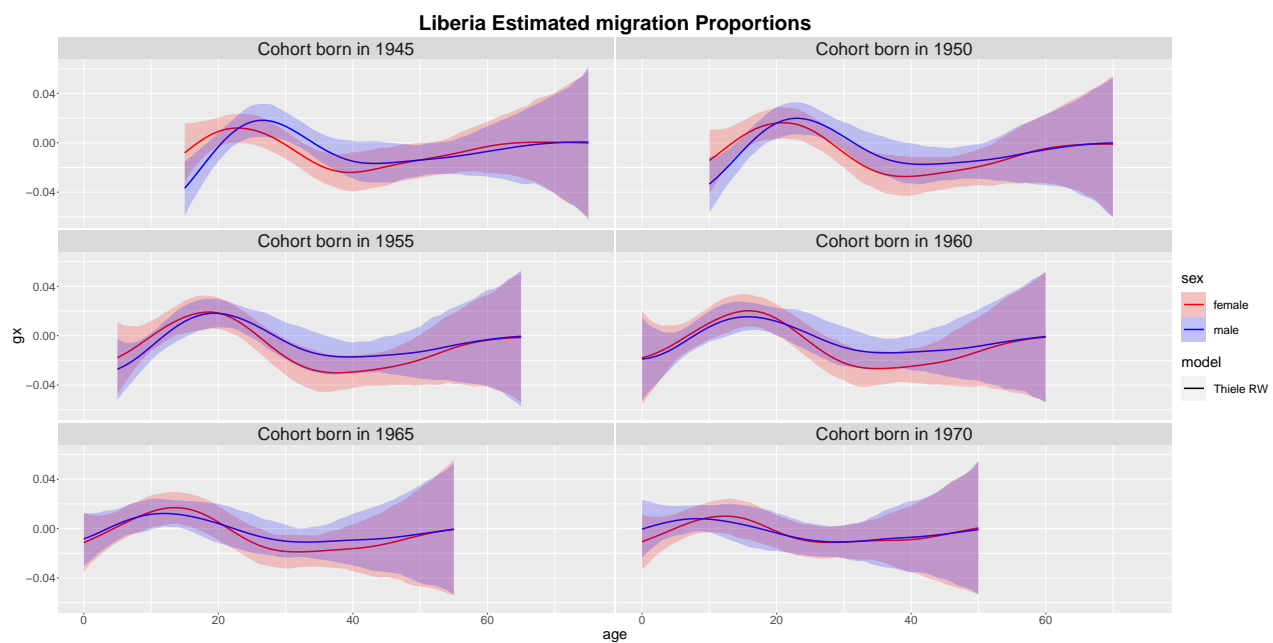


Figure 18: Migration

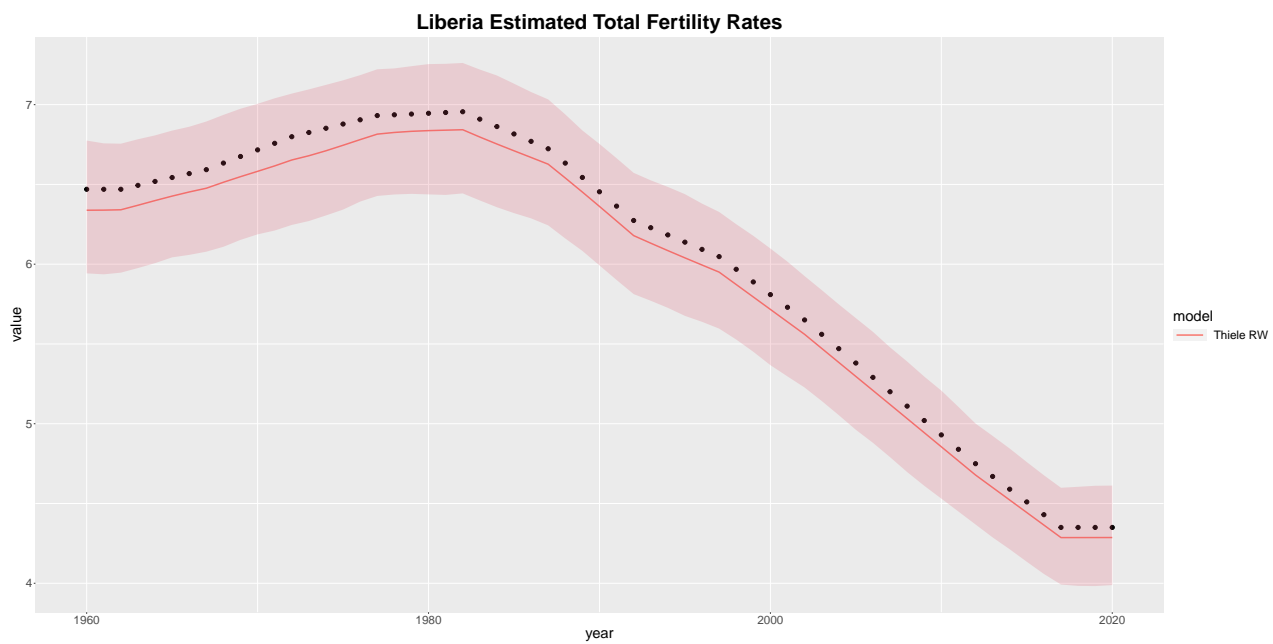


Figure 19: Total Fertility

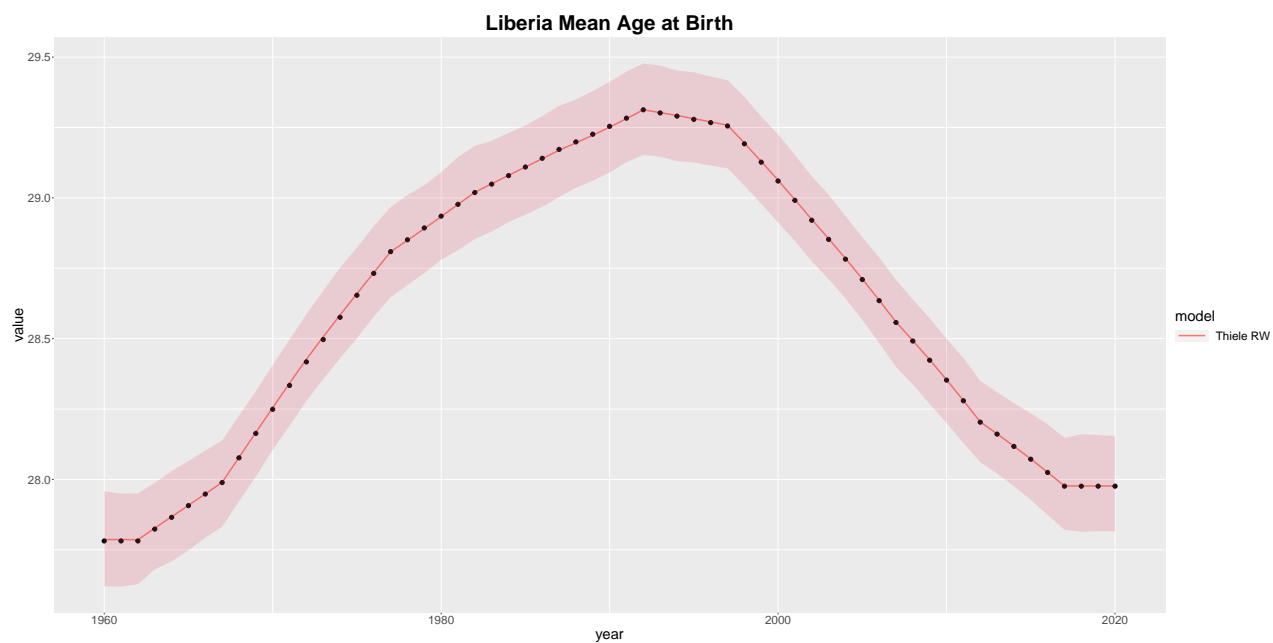


Figure 20: Mean age at births

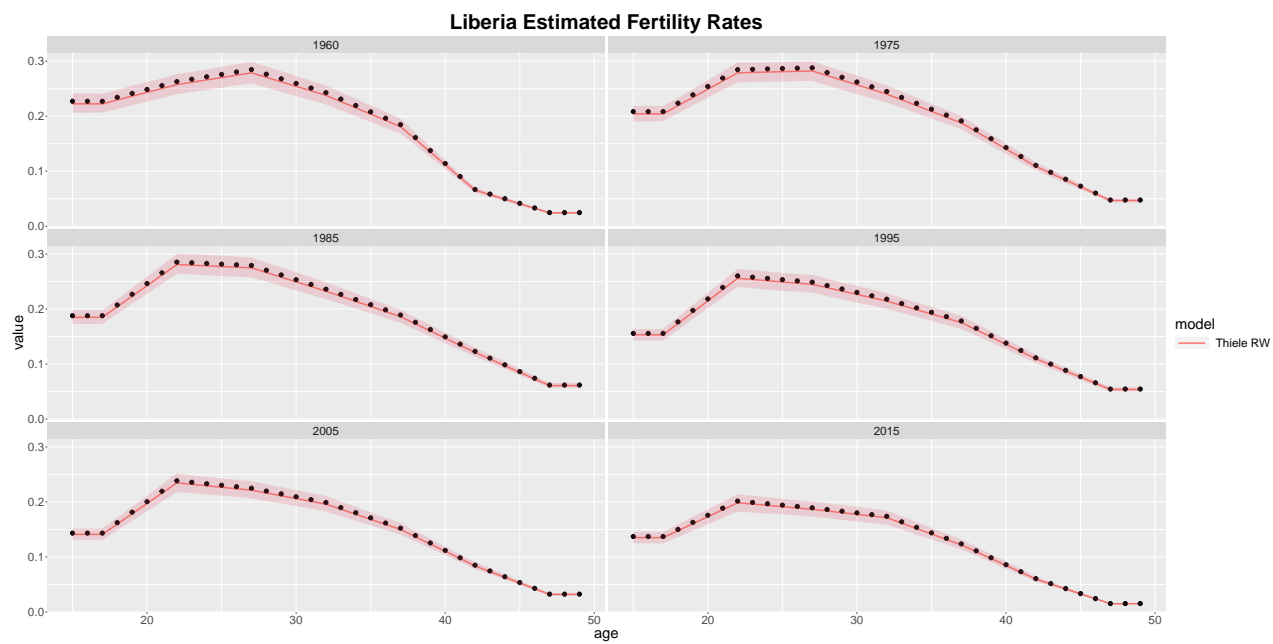


Figure 21: Fertility

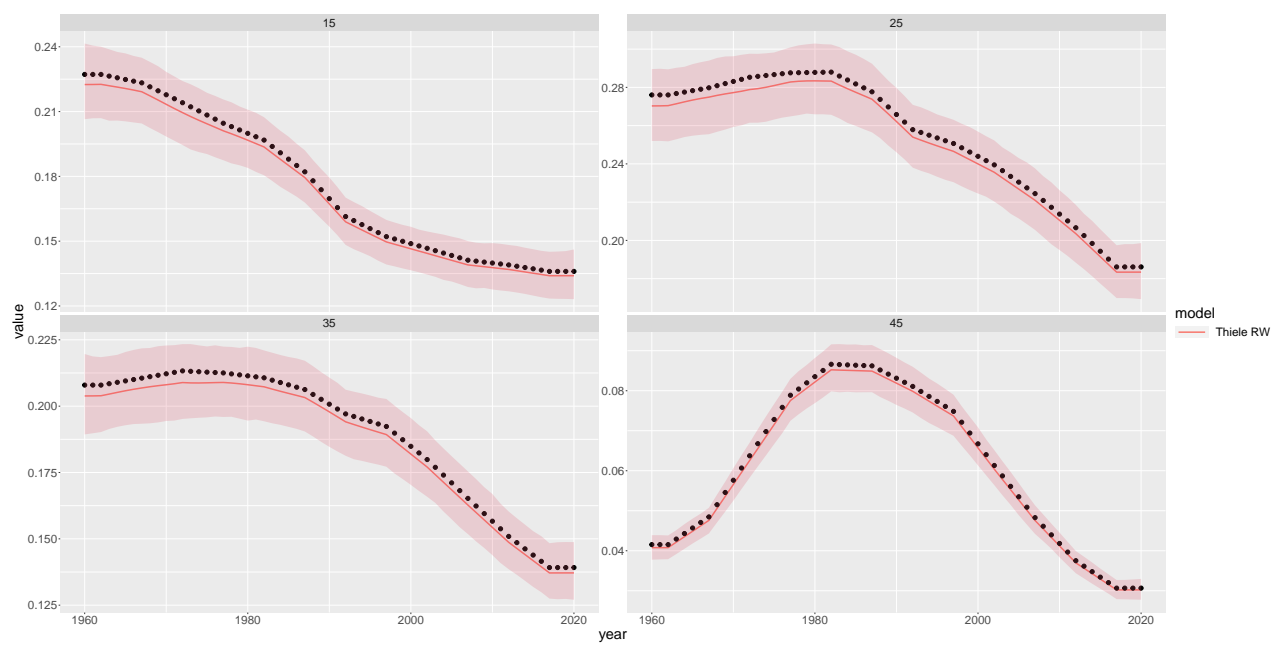


Figure 22: Fertility