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 34275. 52801.
## 5      4 33406. 52205.
## 6      5 32371. 51519.
## 7      6 31547. 51259.
## 8      7 30720. 50427.
## 9      8 29266. 48790.
## 10     9 27504. 46691.
## # ... with 76 more rows
```

```
## [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 34568. 53886.
## 5      4 33881. 52978.
## 6      5 33115. 52339.
## 7      6 32483. 52074.
## 8      7 32050. 51227.
## 9      8 31073. 49680.
## 10     9 29638. 47601
## # ... with 76 more rows
```

Thiele log-Normal Hump Spline

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

```
##           log_tau2_logpop_f          log_tau2_logpop_f          log_tau2_logpop_m          log_tau2_
##                  5.90799361                 4.76151455                 5.94518950                 4.8
##             log_tau2_gx_m          log_lambda_gx_age_f          log_lambda_gx_age_m          log_lambda_g
##                  3.65524476                 6.78081667                 7.71972007                 7.0
##        log_lambda_gx_agetime_m                log_lambda_tp log_lambda_tp_0_inflated_sd          log_disp
##                  6.90778794                 1.30833684                 0.61222272                -0.
##       log_marginal_prec_psi_f        log_marginal_prec_A_f        log_marginal_prec_B_f          log_marginal_pr
##                  4.32990615                 6.79965346                 6.72471472                 4.4
##          log_marginal_prec_B_m              log_lambda_phi_f              log_lambda_psi_f             log_lambda_
##                  6.93956974                 4.38459696                 4.34282852                 4.
##                log_lambda_A_f                log_lambda_B_f              log_lambda_phi_m              log_lamb
##                  4.30531930                 4.27949618                 4.42266794                 4.3
##           log_lambda_epsilon_m                log_lambda_A_m                log_lambda_B_m
##                  4.24877261                 4.30760207                 4.30705767
```
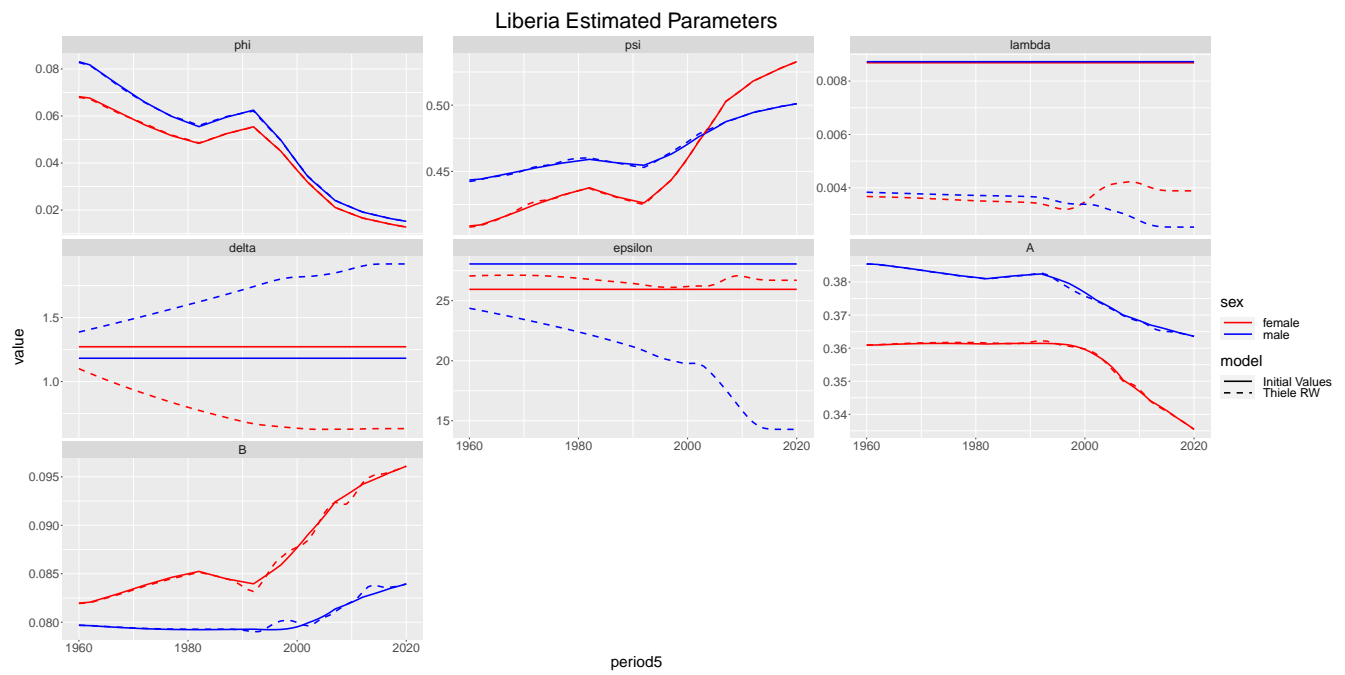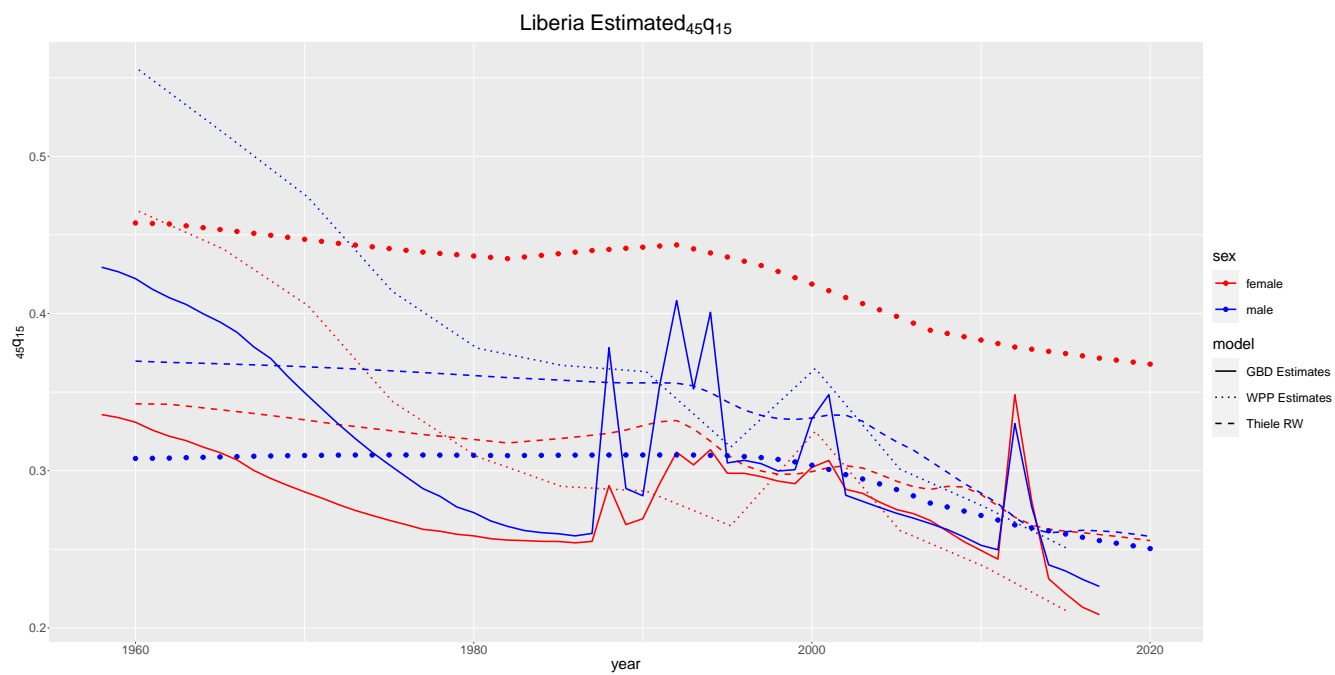
1

Figure 1: Estimated parameters

Liberia Estimated $_{45}q_{15}$

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

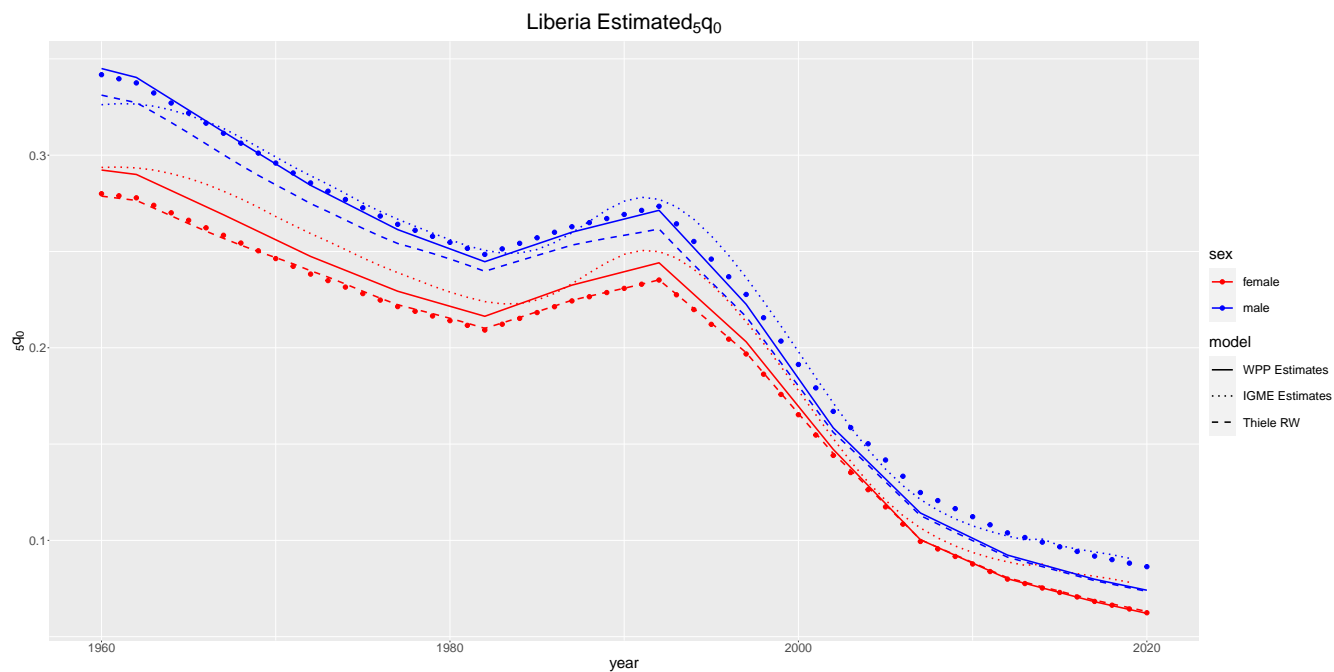Figure 3: Estimated $_5q_0$

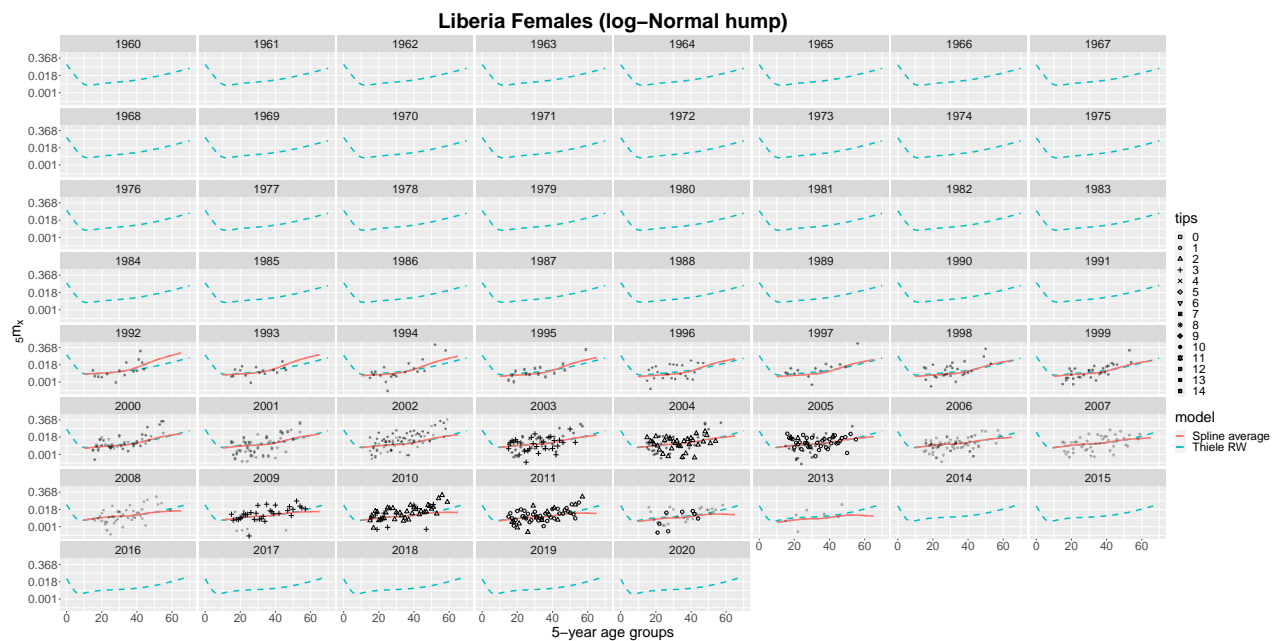Figure 4: Mortality Schedules
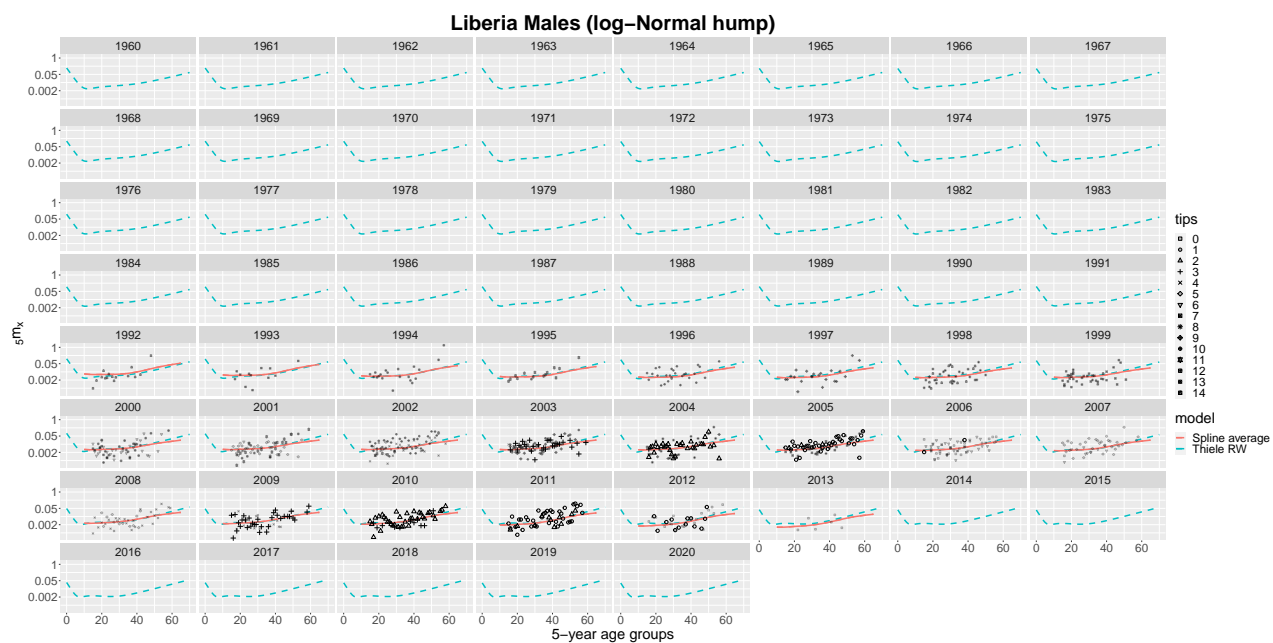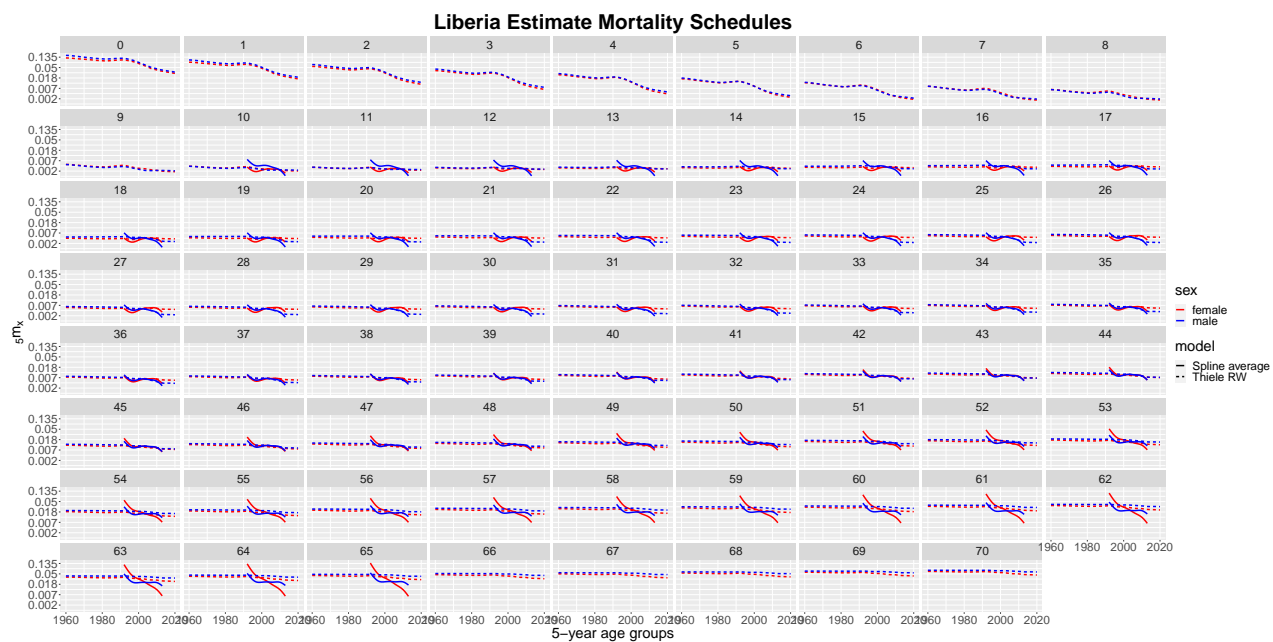
Figure 5: Mortality Schedules
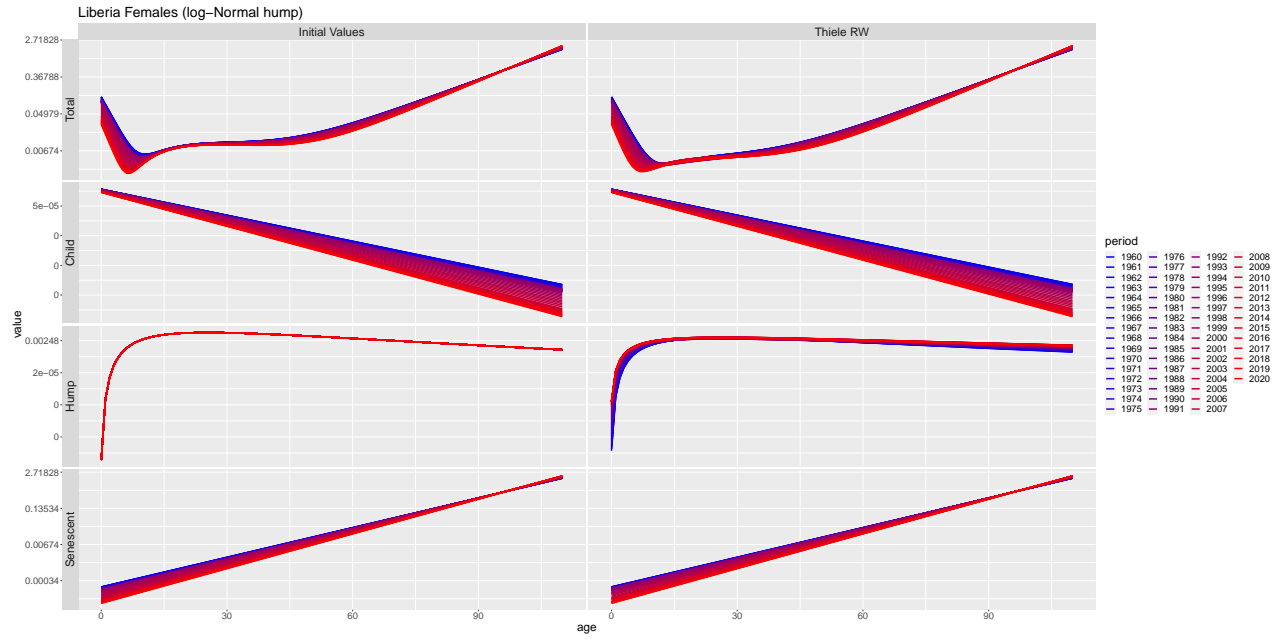

Figure 6: Mortality Schedules
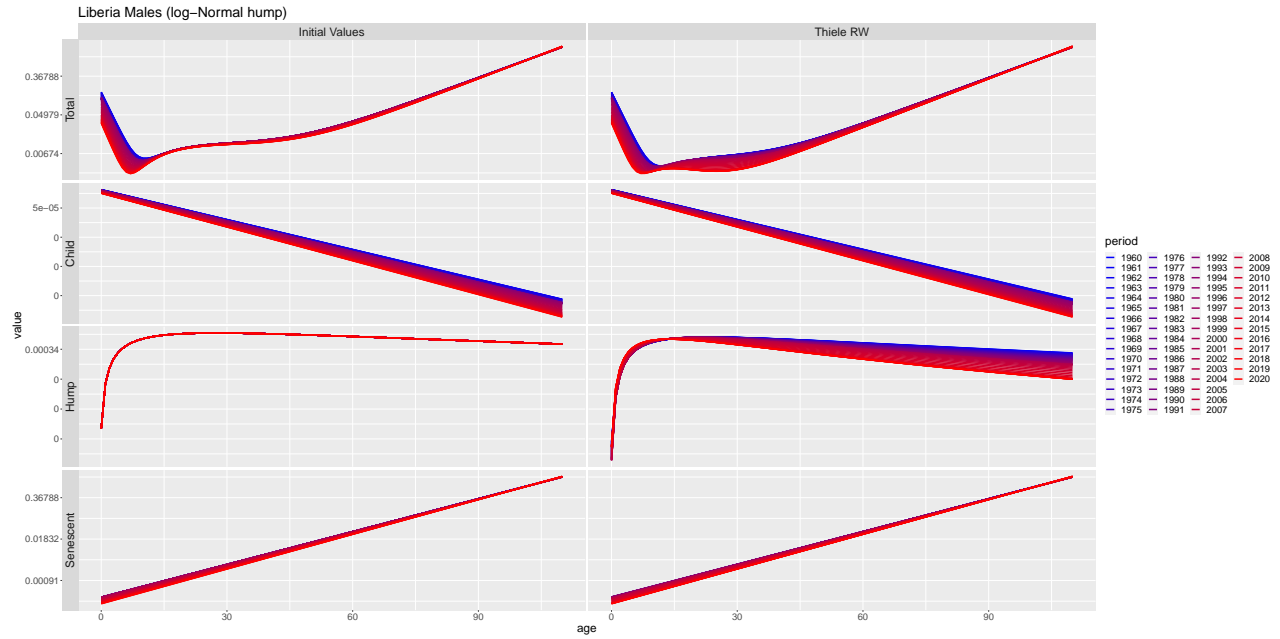
5

Figure 7: Thiele Decomposed
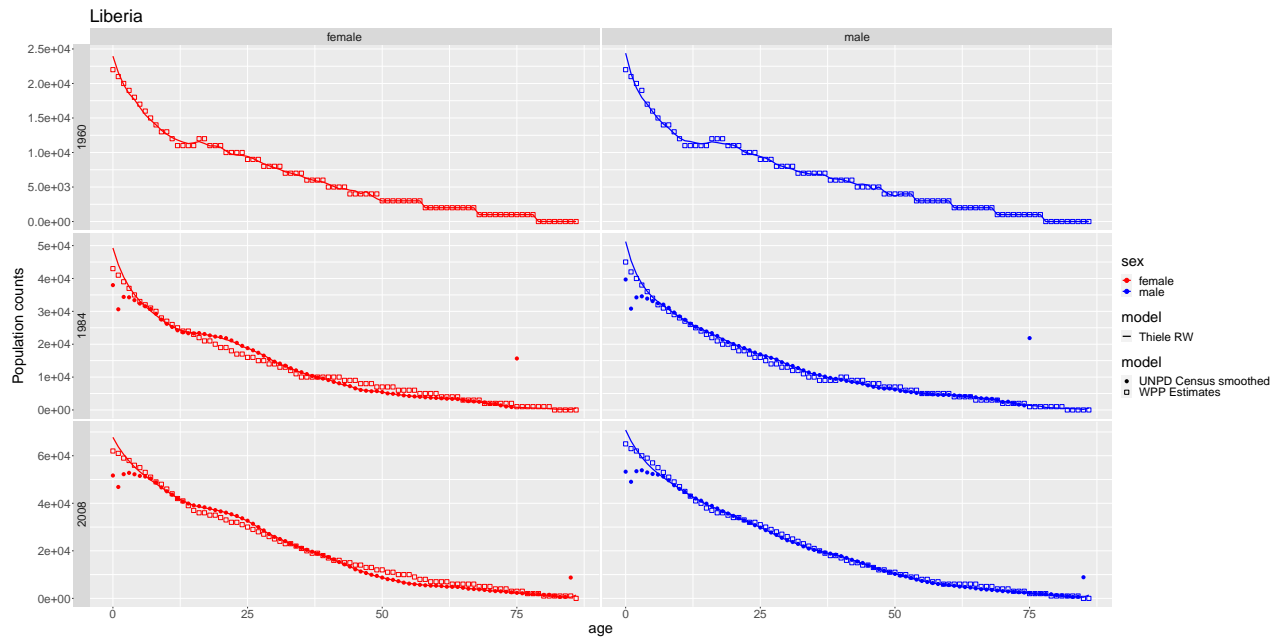

Figure 8: Thiele Decomposed
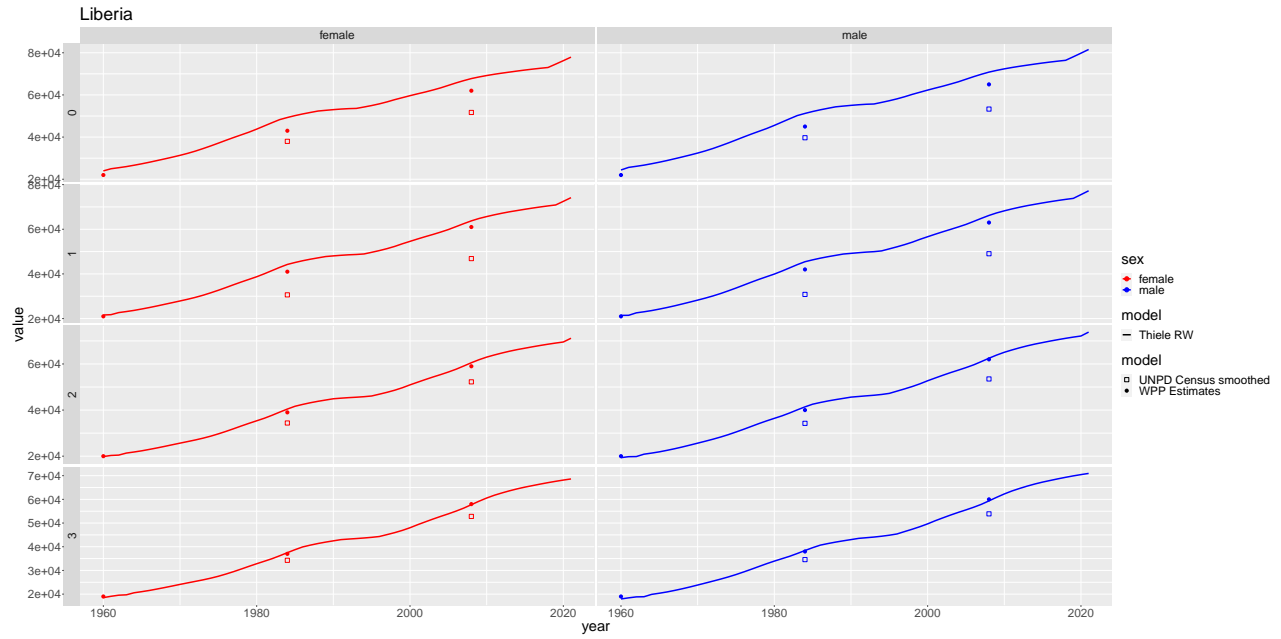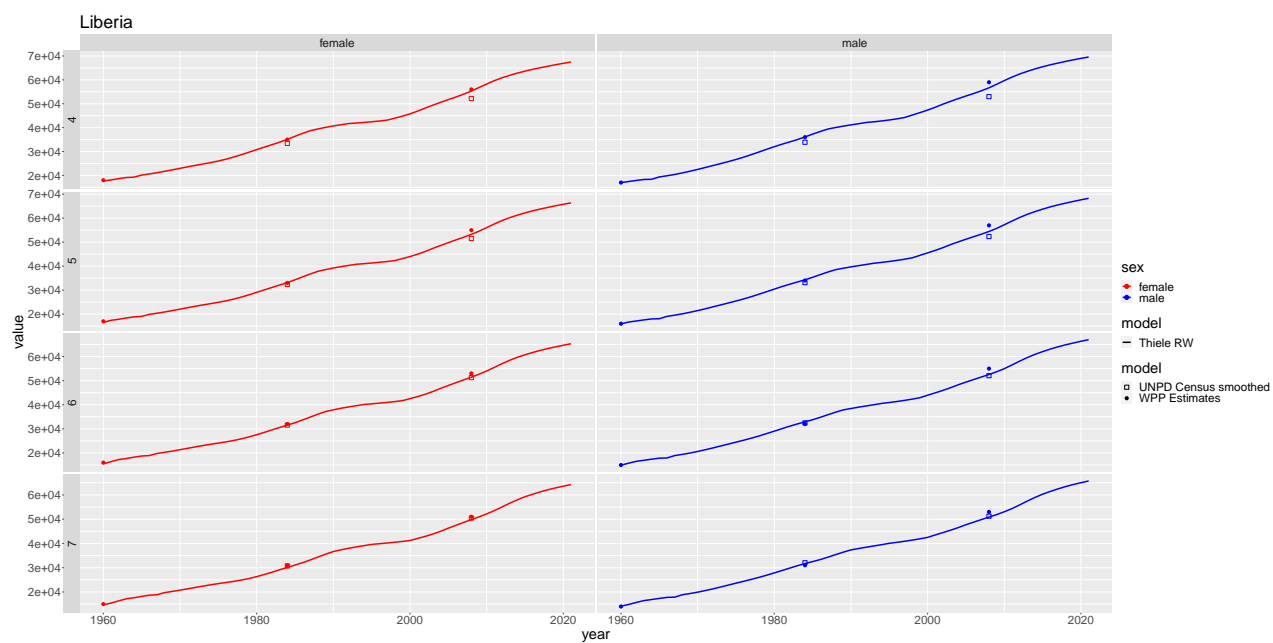
Figure 9: Population

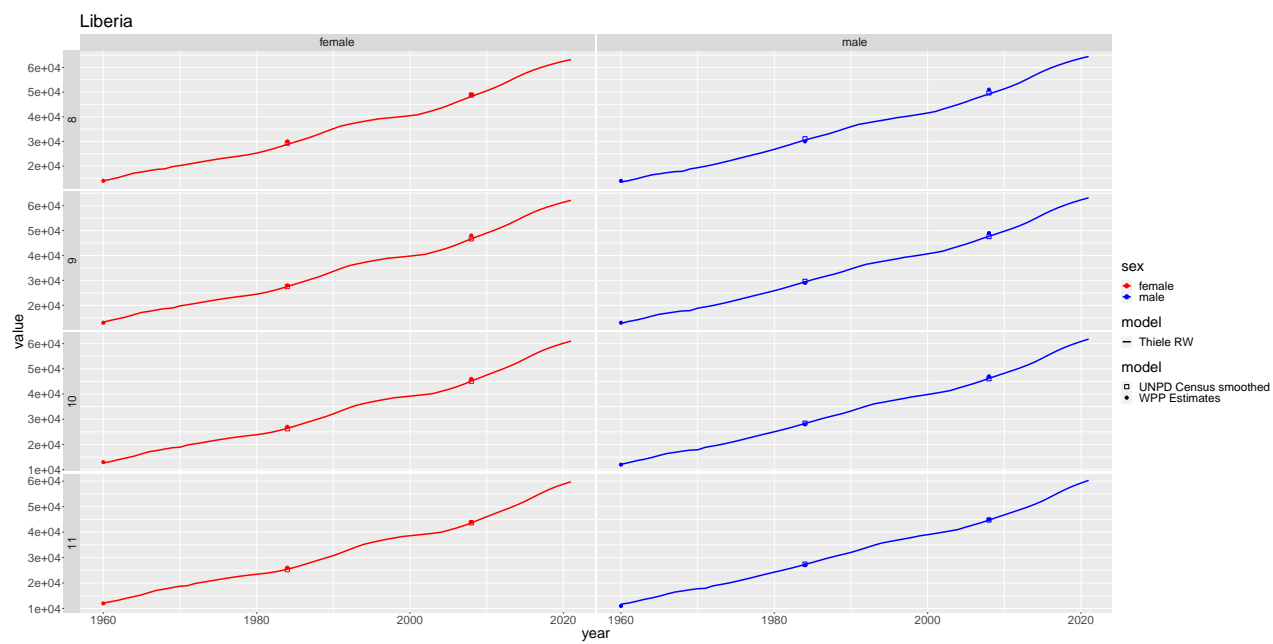

Figure 10: Population
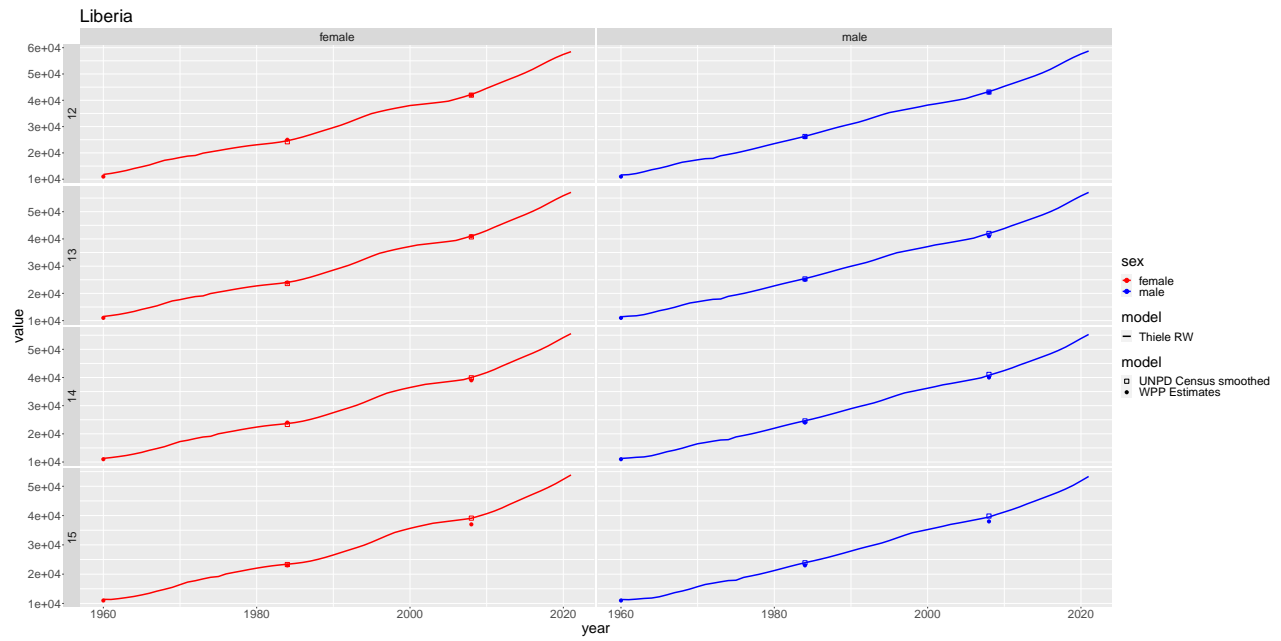
Figure 11: Population
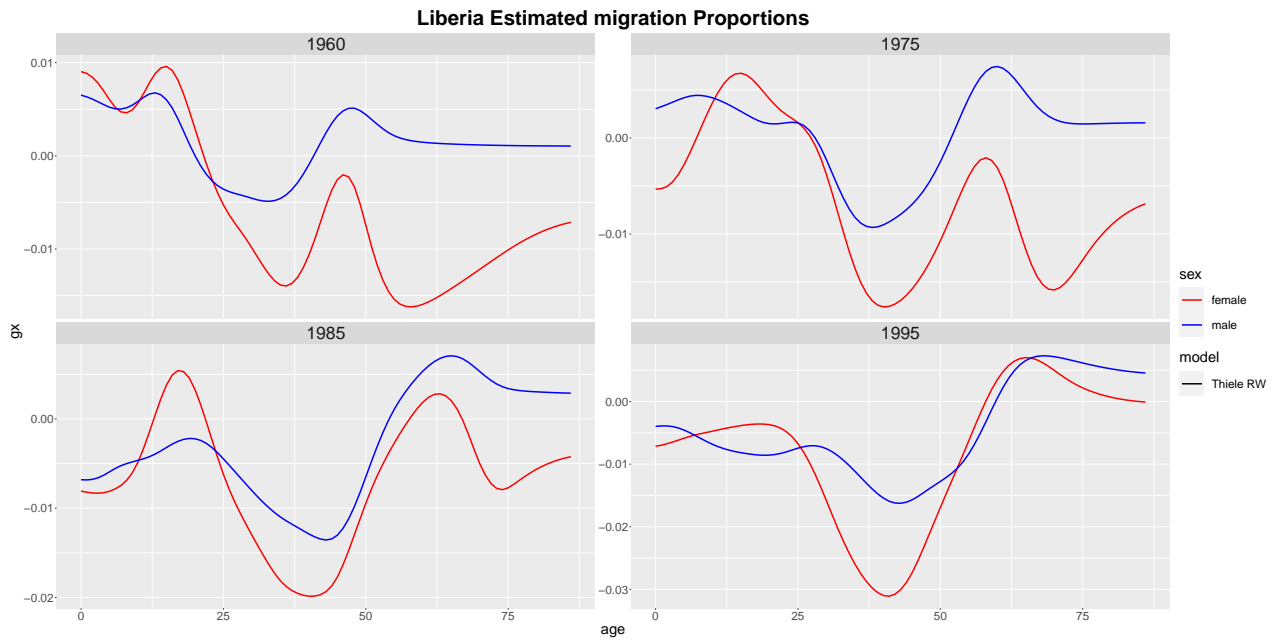

Figure 12: Population

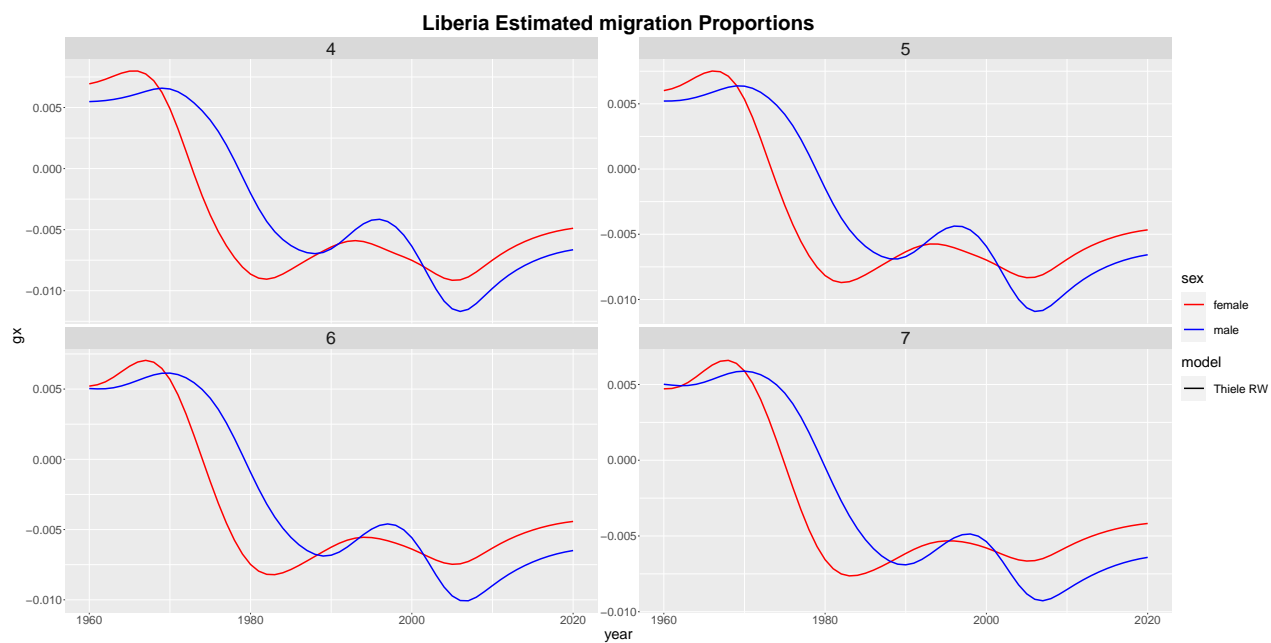Figure 13: Population

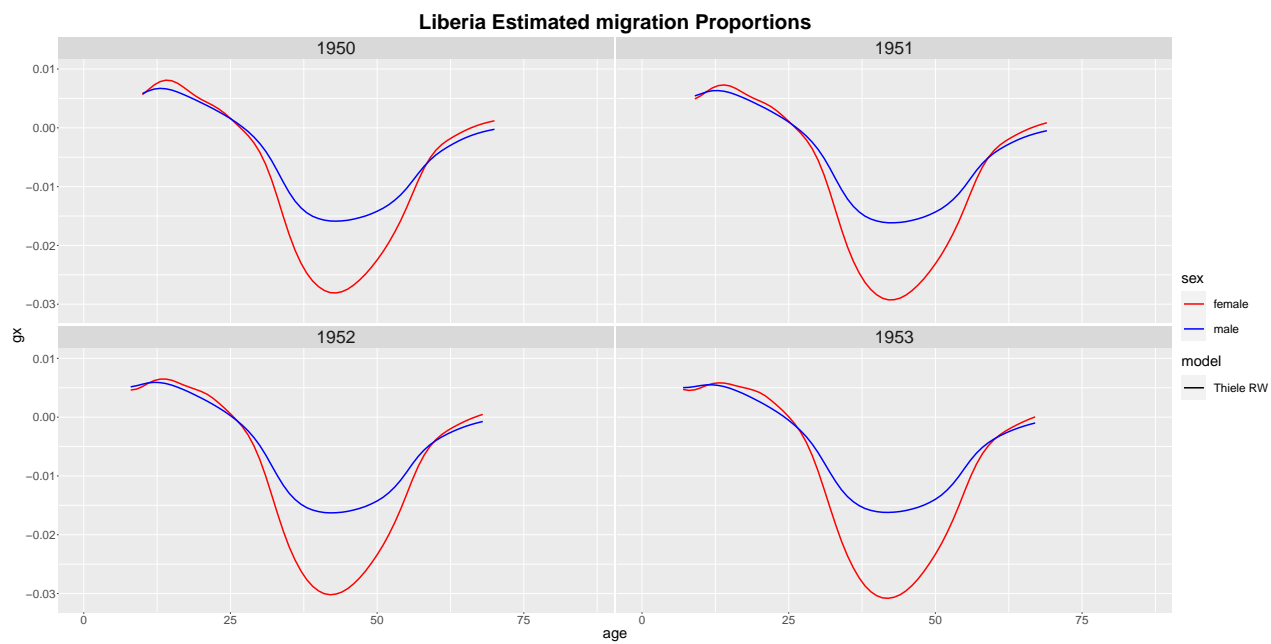

Figure 14: Migration
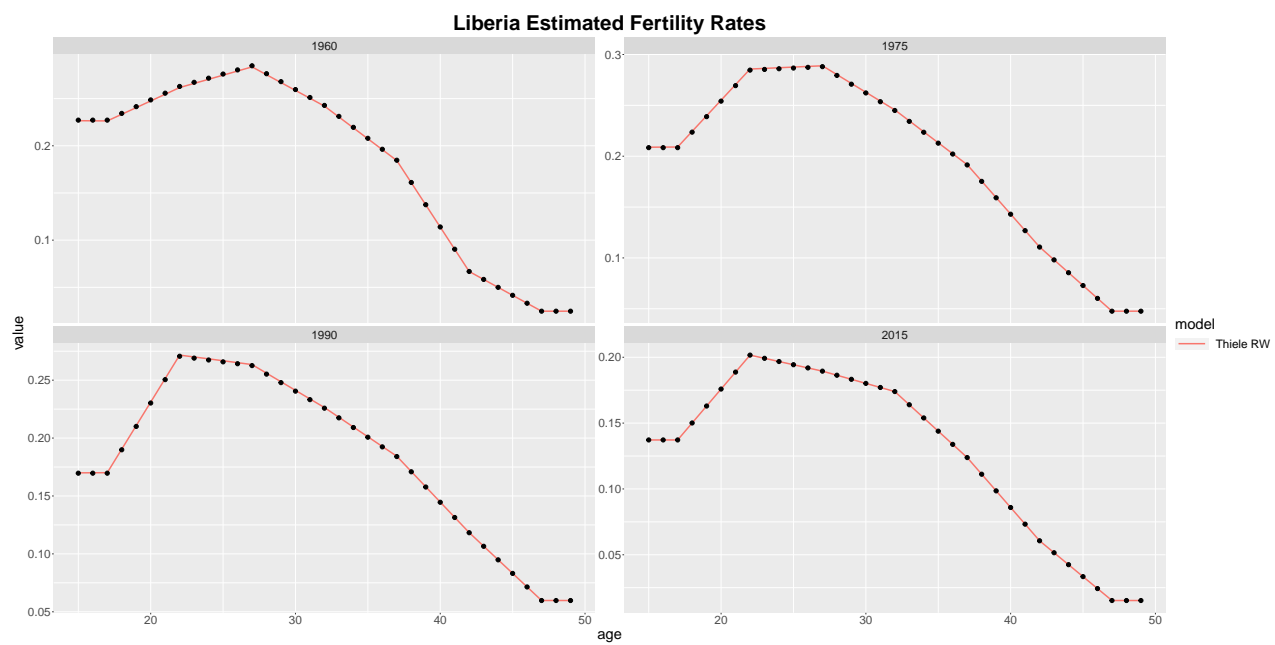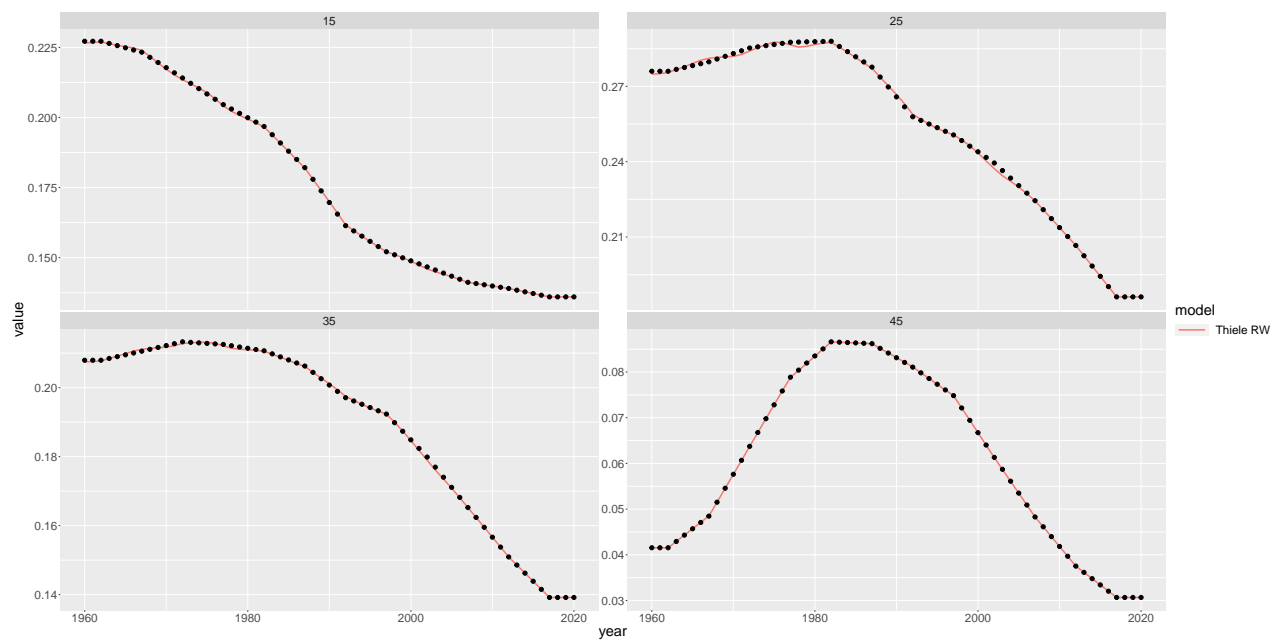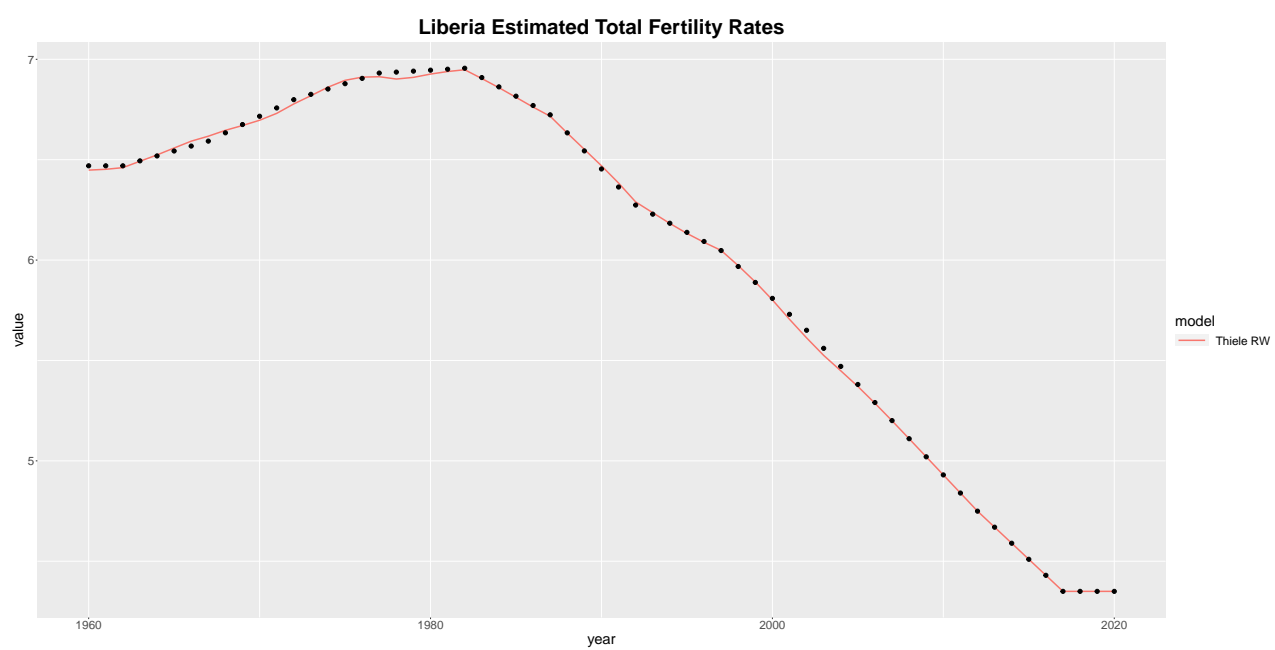
Figure 15: Migration

Figure 16: Migration

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Figure 17: Fertility

Figure 18: Fertility

Figure 19: Total Fertility