

Zambia

[1] "Census Females"

```
## # A tibble: 87 x 6
##   age `1969` `1980` `1990` `2000` `2010`
##   <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>
## 1     0 84889. 102576. 127337. 170387 220491
## 2     1 80819. 100263. 118568. 158438. 224143
## 3     2 77882. 103185. 119426. 164148. 226622.
## 4     3 75739. 104440. 118650. 162830 221995.
## 5     4 72993. 103628. 117458. 158876. 215854.
## 6     5 70102. 101446. 116510. 155141. 210007.
## 7     6 66986. 99936. 115091. 152768. 207187.
## 8     7 63775. 97797. 113585. 148952 201344.
## 9     8 60435. 94820. 111740. 143360. 195715.
## 10    9 56828. 90837. 109356. 136989. 189090.
## # ... with 77 more rows
```

[1] "Census Males"

```
## # A tibble: 87 x 6
##   age `1969` `1980` `1990` `2000` `2010`
##   <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>
## 1     0 85555. 100973. 125548. 168841 220221
## 2     1 78711. 99404. 117337. 158084. 222980.
## 3     2 75013. 102451. 117859. 163155. 224408.
## 4     3 72908. 104159. 117050. 162234. 220488.
## 5     4 70686. 103266. 115704. 158222 214419
## 6     5 68535. 101056. 114680. 154494. 208240.
## 7     6 65716. 99491. 113397. 152124. 205290.
## 8     7 63156. 97373. 111975. 148292. 199336.
## 9     8 60580. 94602. 110218. 142837. 193666.
## 10    9 57650. 90668. 107801. 136447. 186816.
## # ... with 77 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_
##	7.0310802	5.2987274	7.0283071	5
##	log_tau2_gx_m	log_lambda_gx_age_f	log_lambda_gx_age_m	log_lambda_g
##	2.2933780	7.7897446	7.0936391	6
##	log_lambda_gx_agemtime_m	log_lambda_tp	log_lambda_tp_0_inflated_sd	log_disp
##	6.9077126	2.1201565	-0.9698922	1
##	log_marginal_prec_psi_f	log_marginal_prec_A_f	log_marginal_prec_B_f	log_marginal_pr
##	4.3135817	-0.1043014	6.8544246	4
##	log_marginal_prec_B_m	log_lambda_phi_f	log_lambda_psi_f	log_lambda_
##	1.5748145	4.4165371	4.3613029	2
##	log_lambda_A_f	log_lambda_B_f	log_lambda_phi_m	log_lamb
##	2.1271160	4.3165630	4.4287772	4
##	log_lambda_epsilon_m	log_lambda_A_m	log_lambda_B_m	
##	4.8414948	4.3000580	4.8429436	

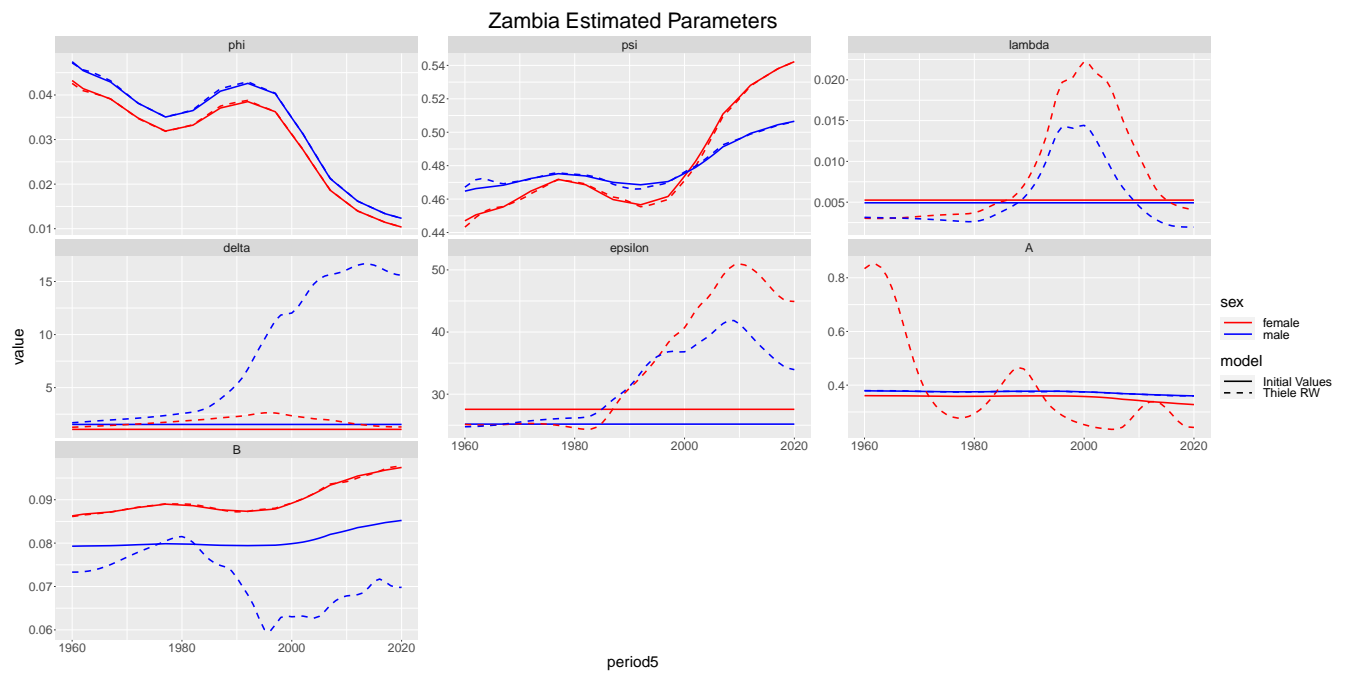


Figure 1: Estimated parameters

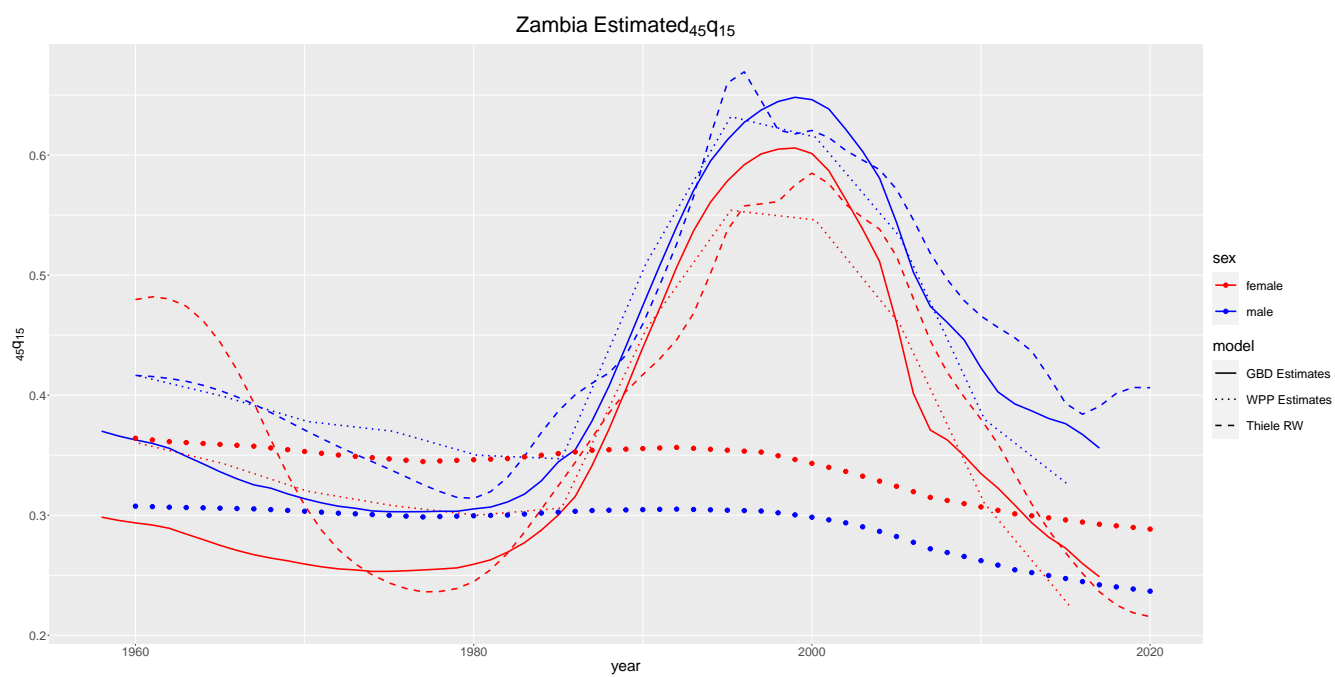


Figure 2: Estimated $_{45}q_{15}$

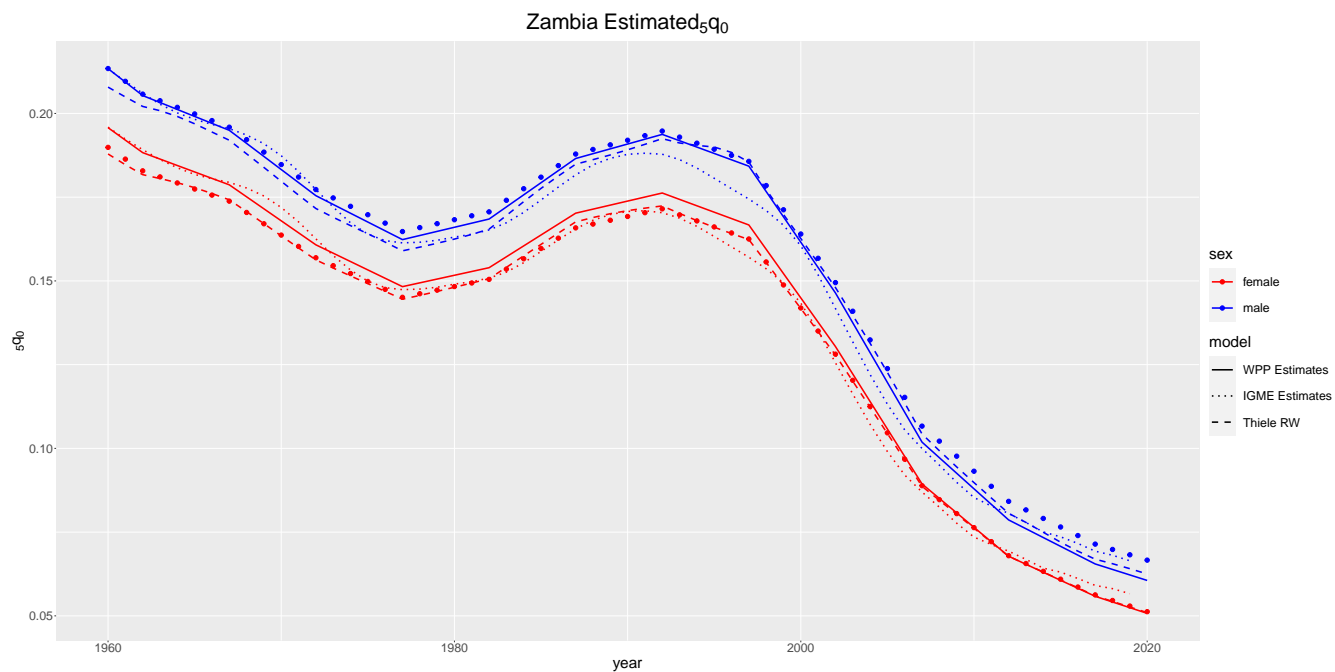


Figure 3: Estimated ${}_5q_0$

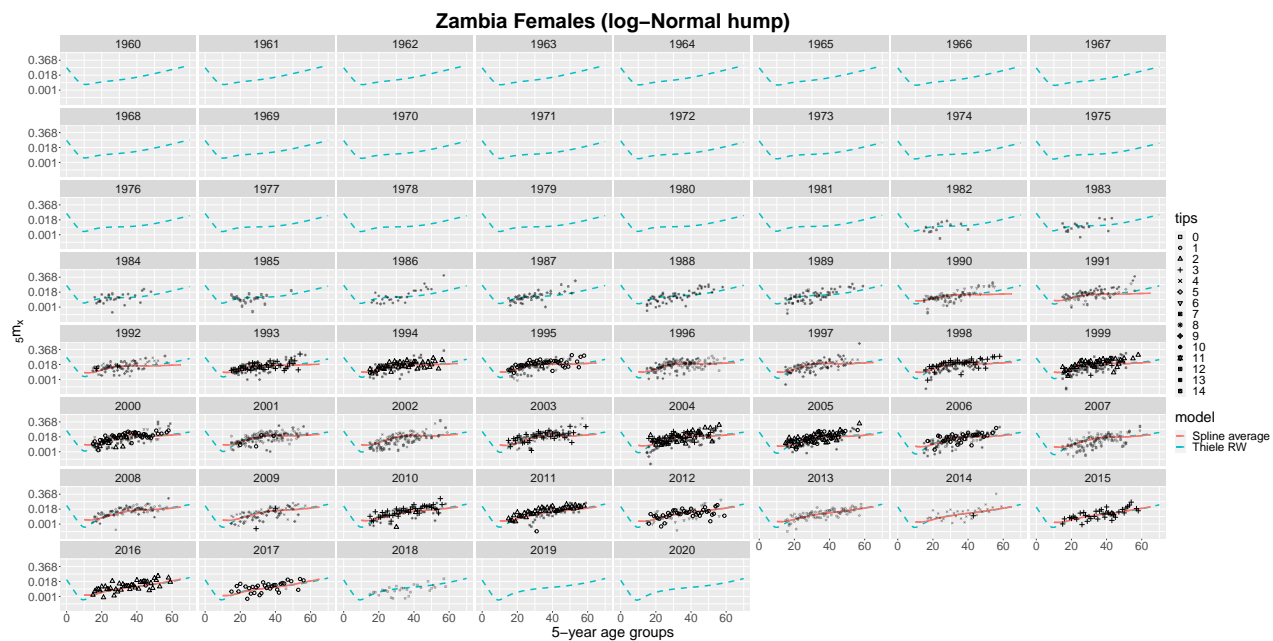


Figure 4: Mortality Schedules

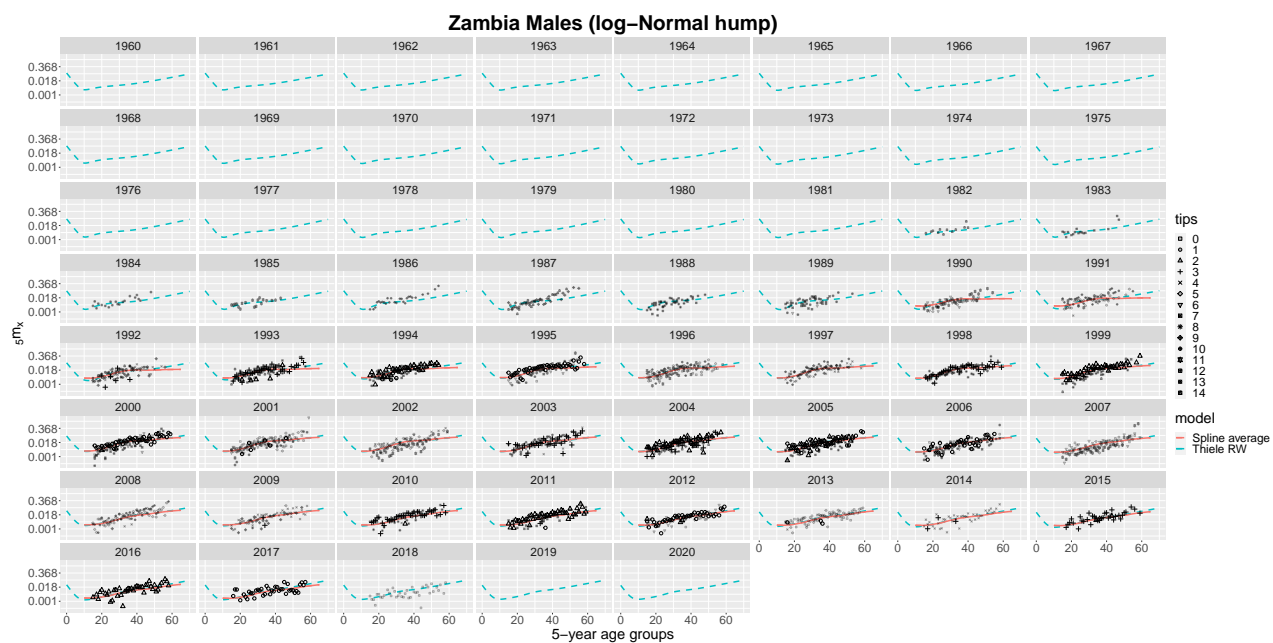


Figure 5: Mortality Schedules

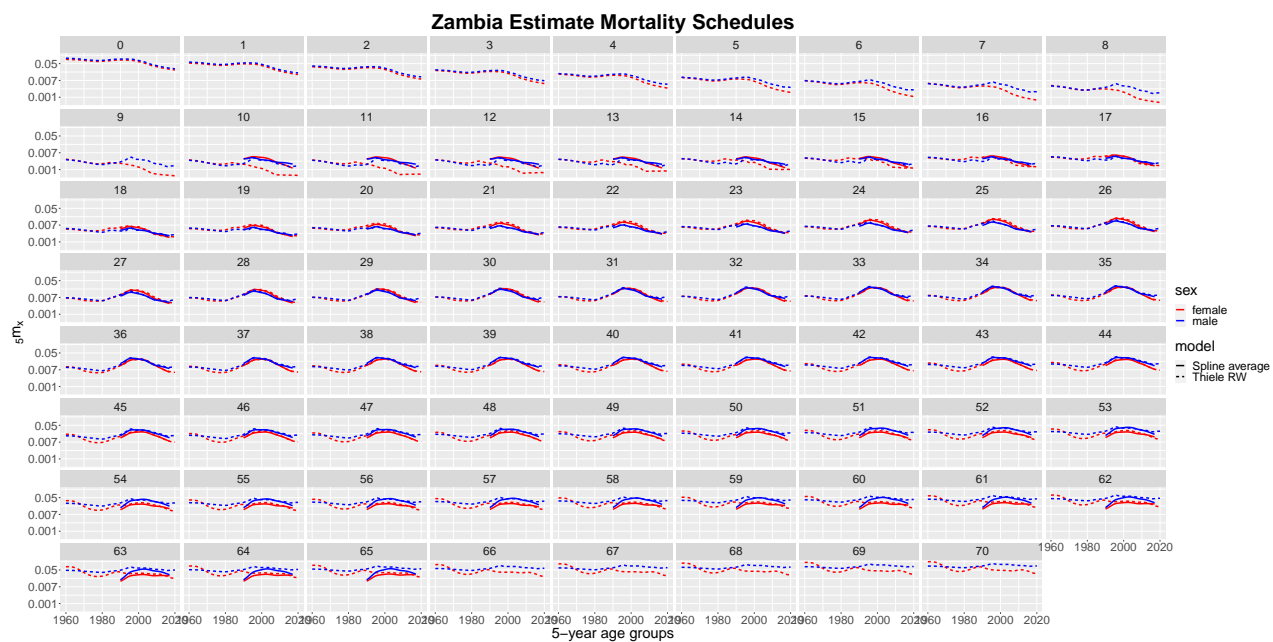


Figure 6: Mortality Schedules

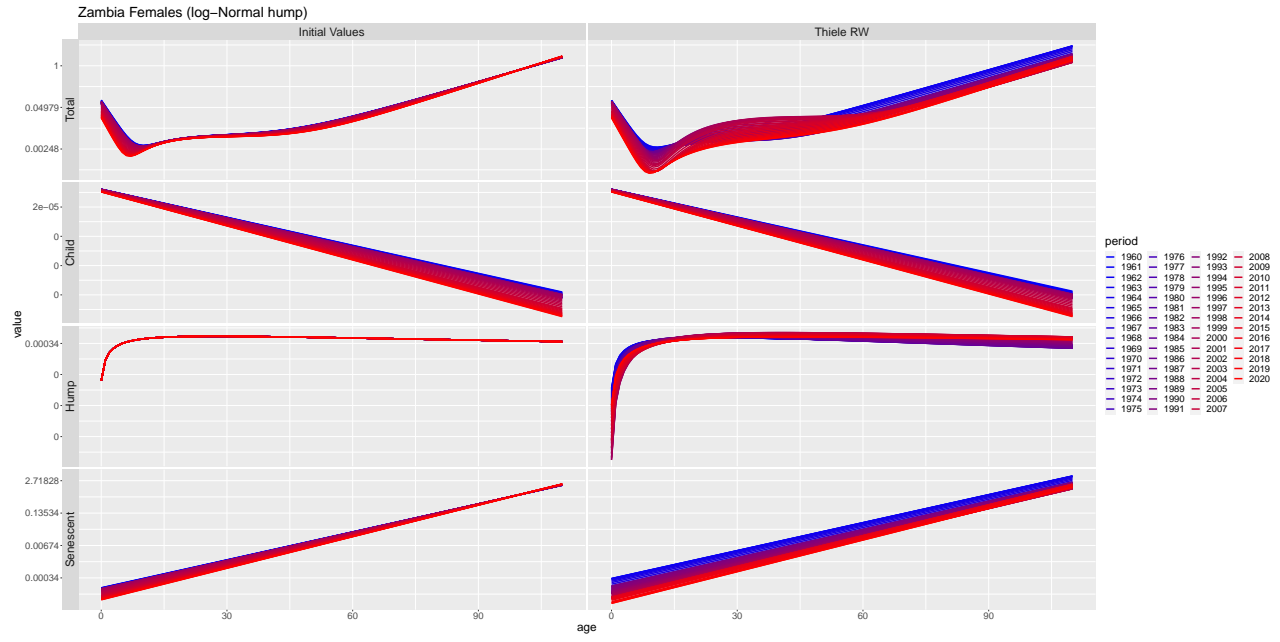


Figure 7: Thiele Decomposed

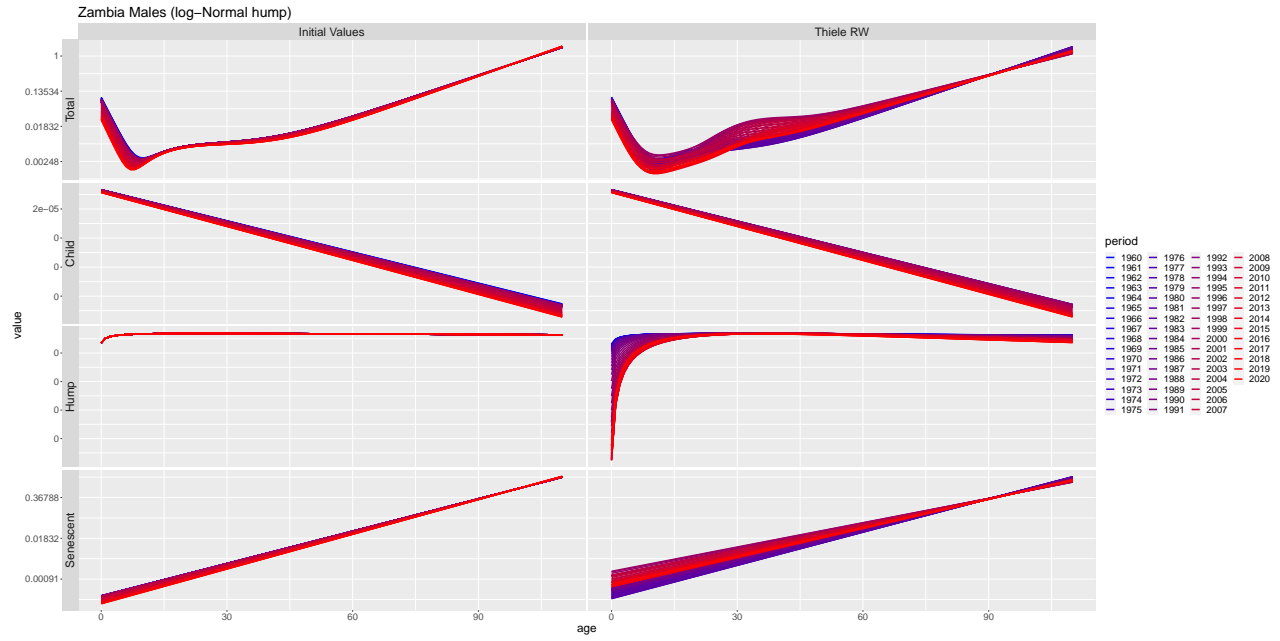


Figure 8: Thiele Decomposed

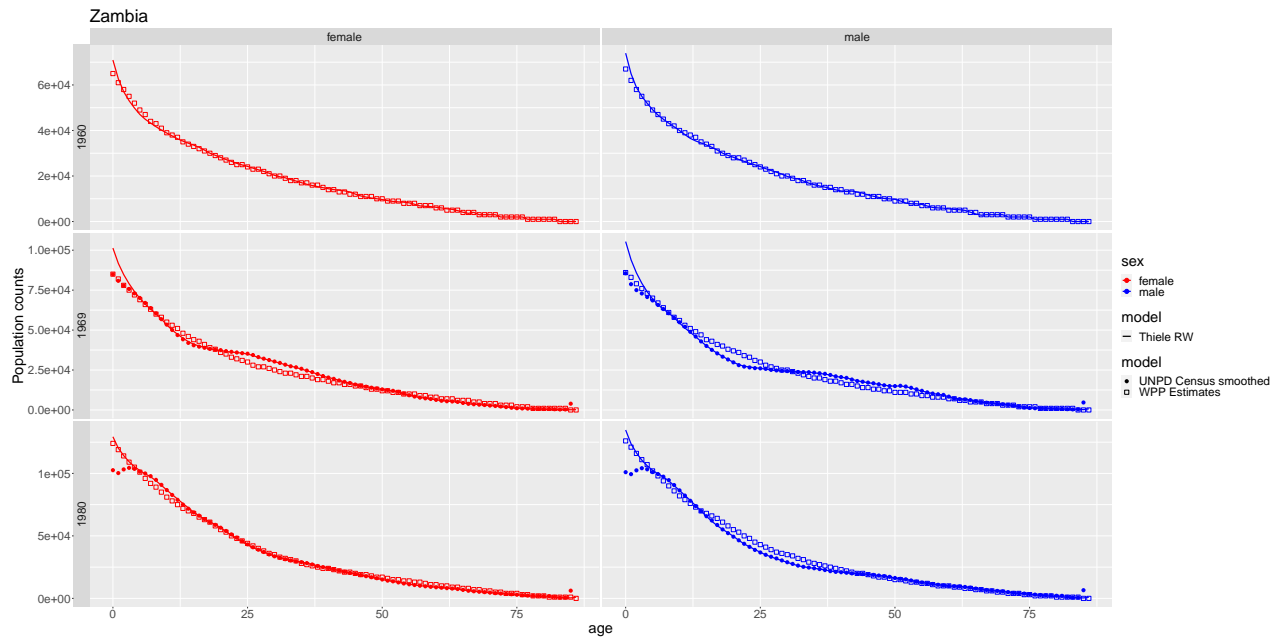


Figure 9: Population

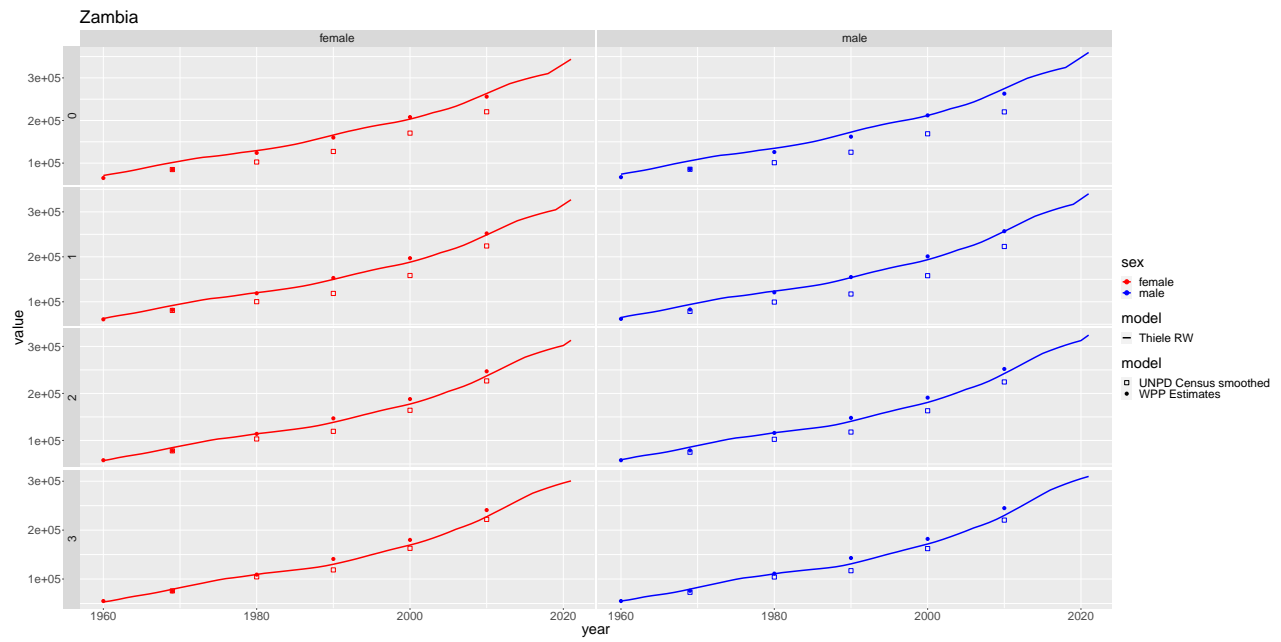


Figure 10: Population

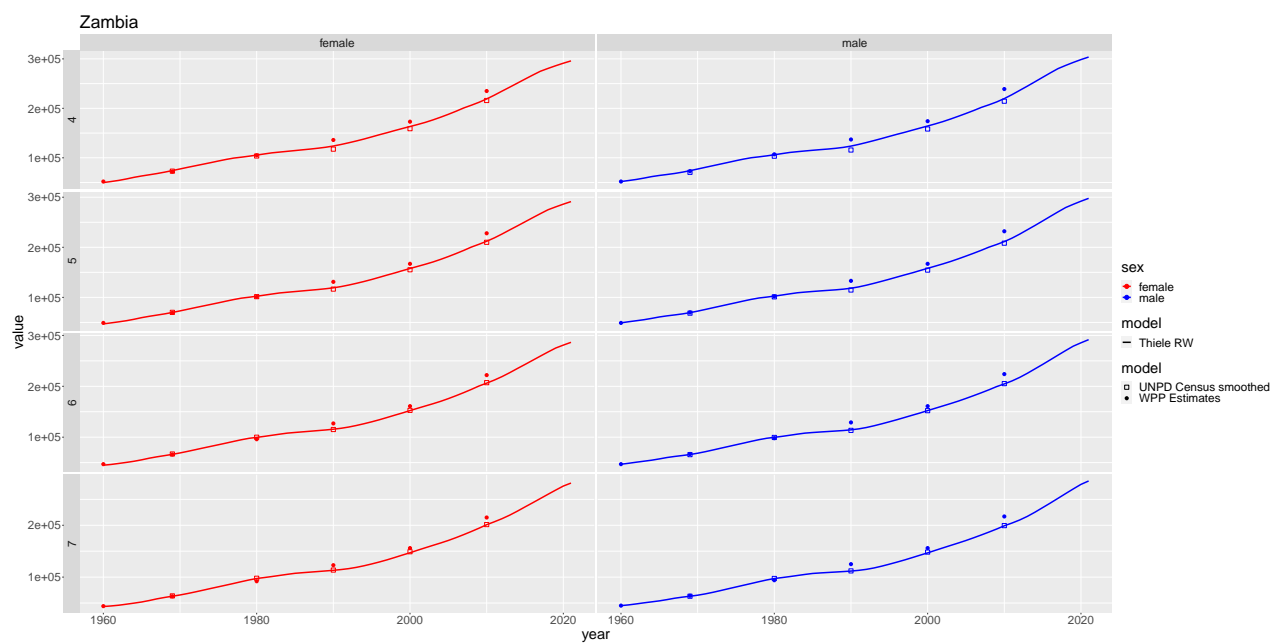


Figure 11: Population

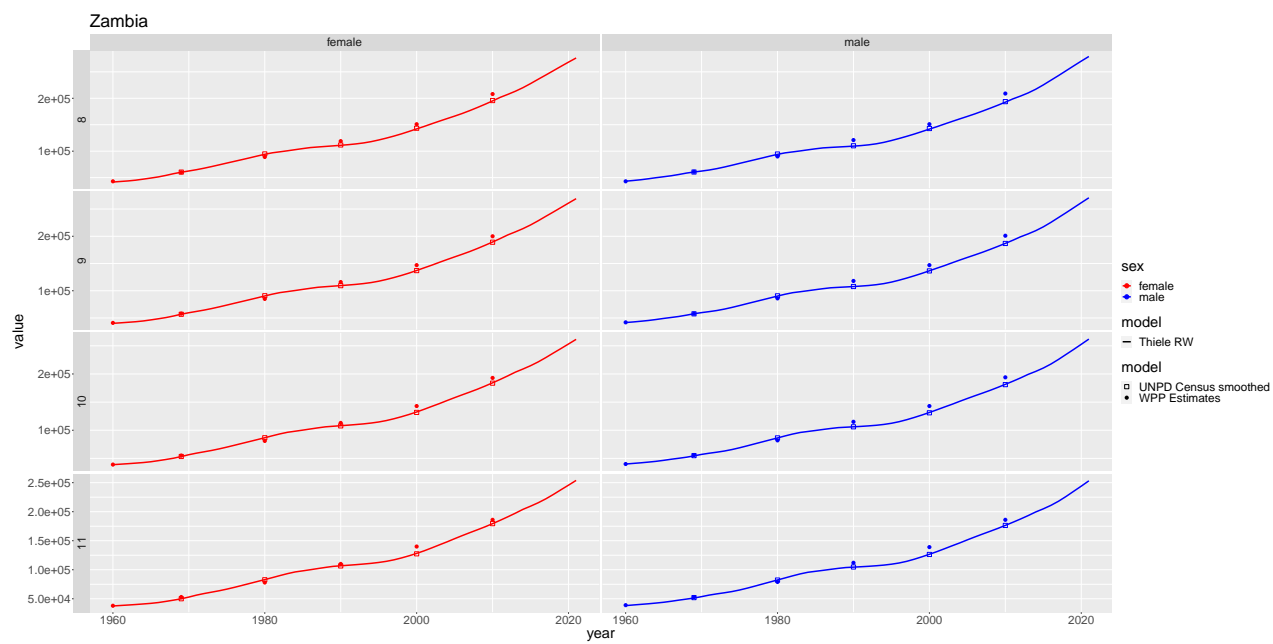


Figure 12: Population

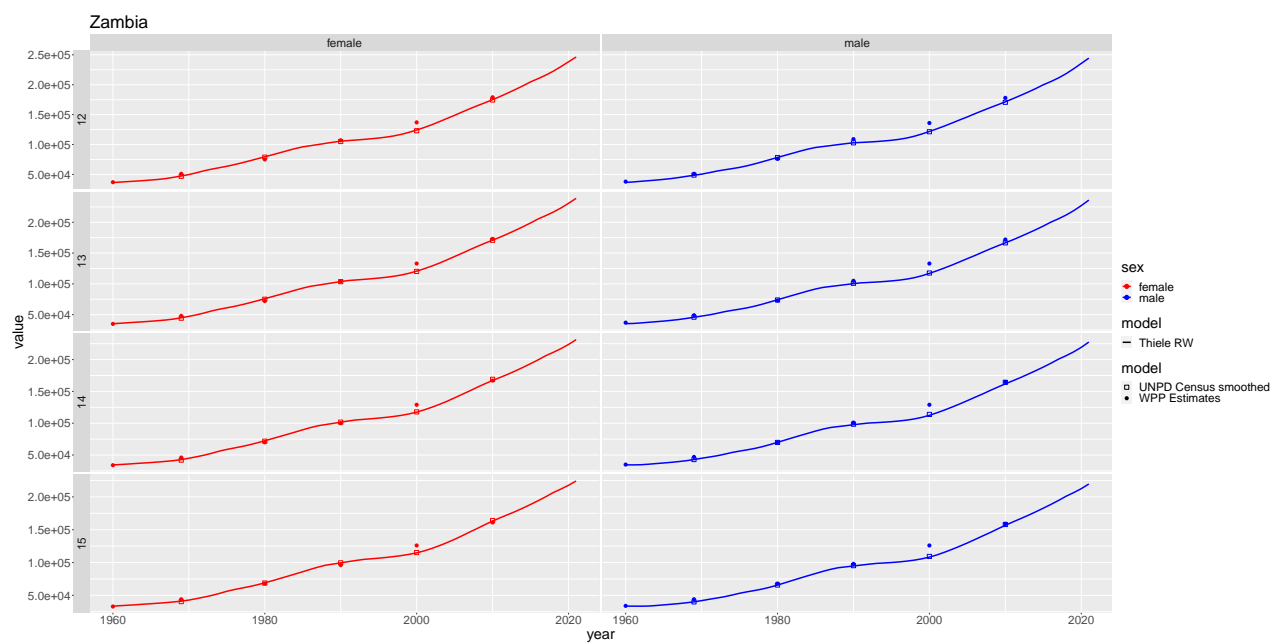


Figure 13: Population

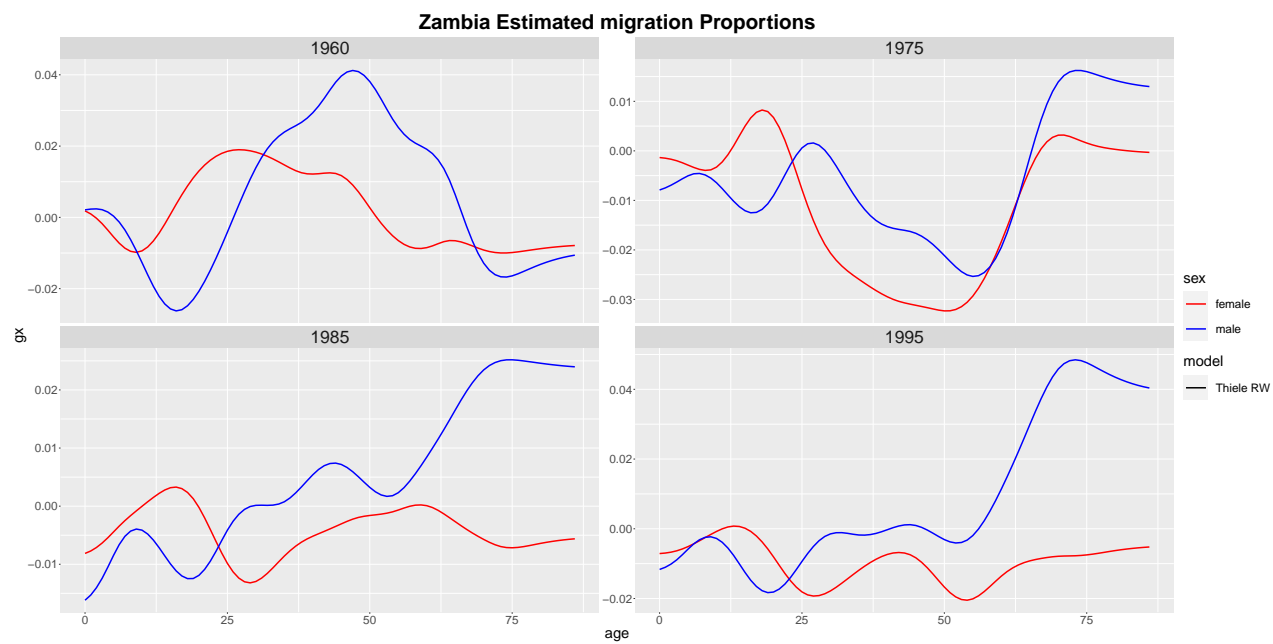


Figure 14: Migration

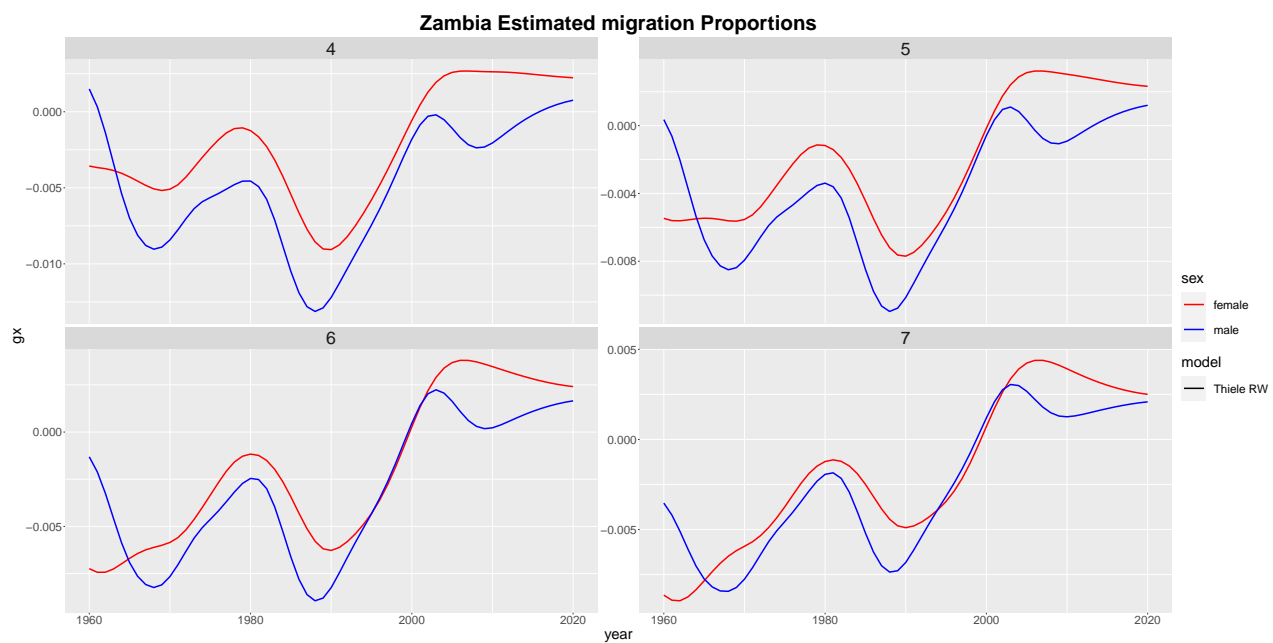


Figure 15: Migration

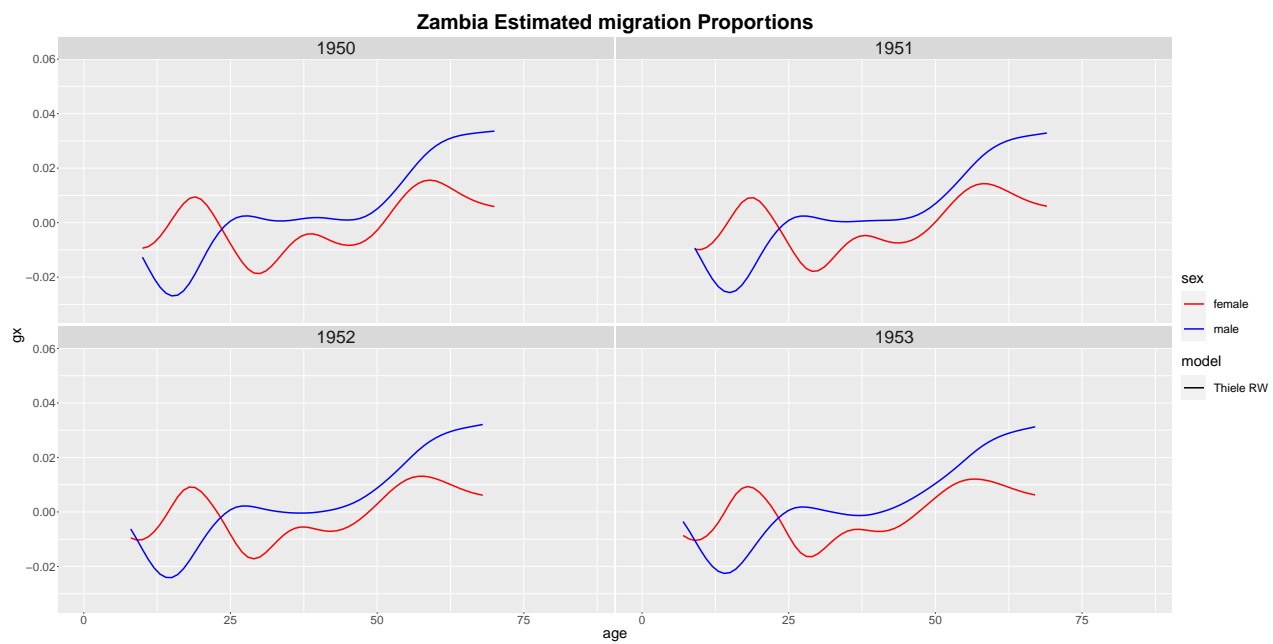


Figure 16: Migration

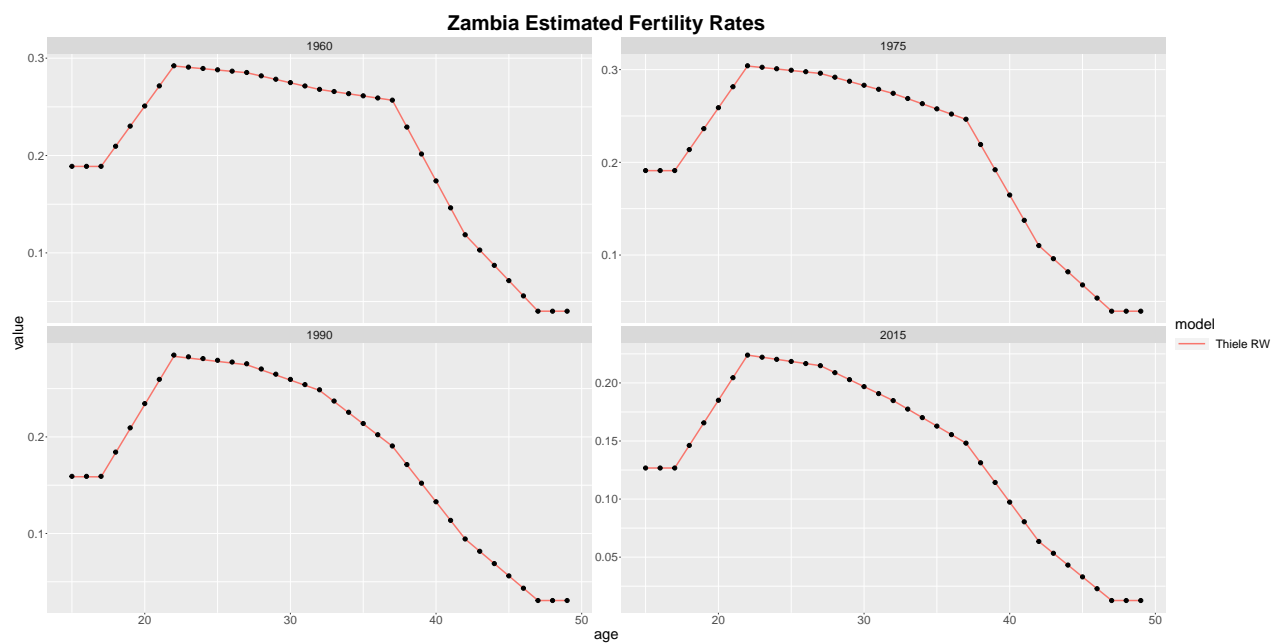


Figure 17: Fertility

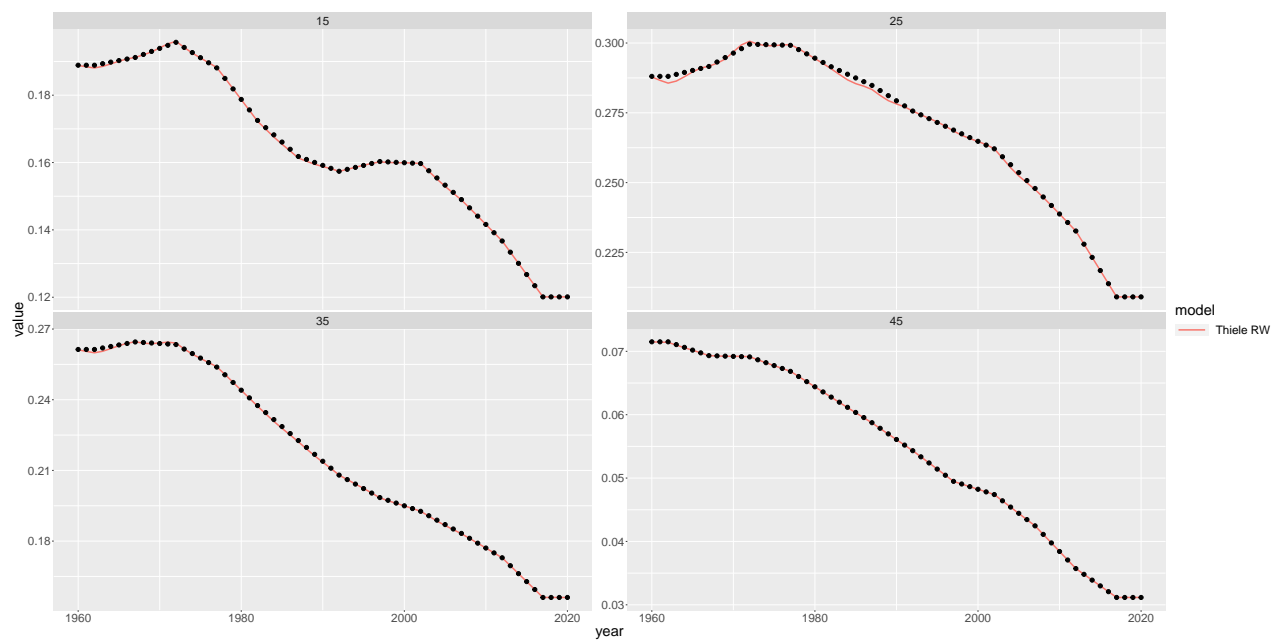


Figure 18: Fertility

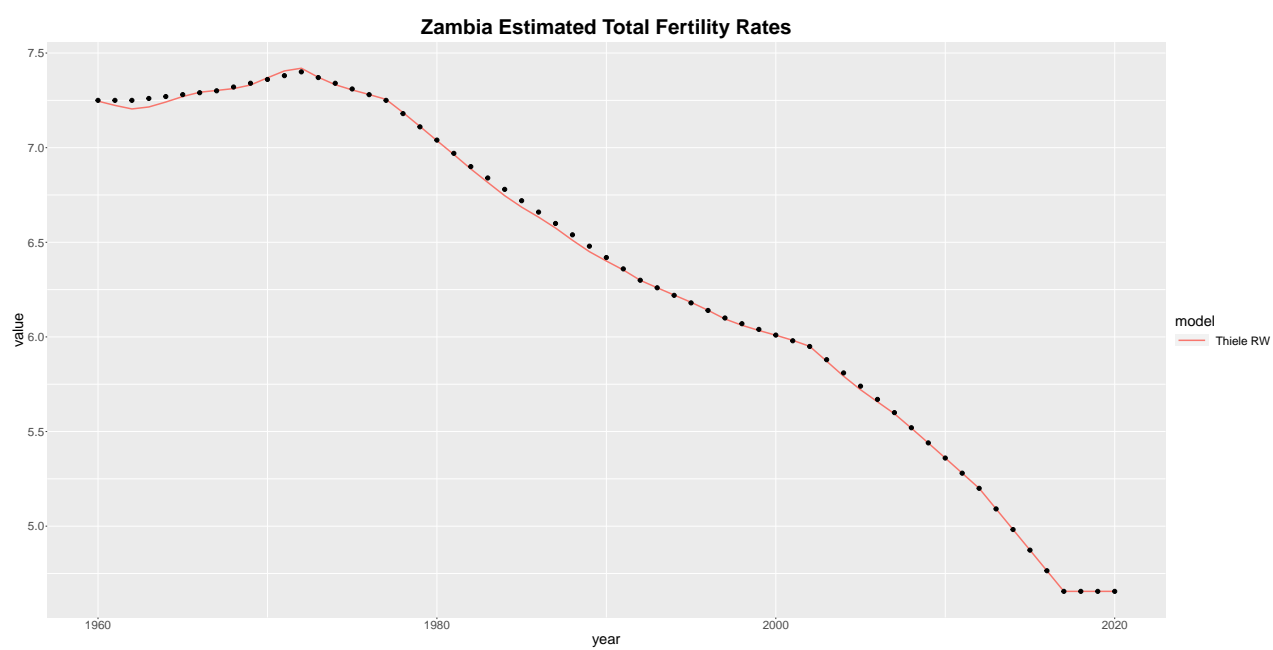


Figure 19: Total Fertility