

# Zimbabwe

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

## # A tibble: 86 x 6
##   age `1969` `1982` `1992` `2002` `2012`
##   <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>
## 1     0  215. 137025. 169096. 170969. 215352.
## 2     1  201. 134484. 158681. 172089. 210806.
## 3     2  219. 133645. 157913. 168681. 198416.
## 4     3  229. 130954. 157785. 166179. 189947.
## 5     4  241. 128456. 159981. 161303. 180342.
## 6     5  251. 126457. 161906. 157541. 174662.
## 7     6  258. 125796. 163620. 156585. 172448.
## 8     7  261. 125192. 165880. 154780. 170342.
## 9     8  262. 123948. 167305. 154361. 169826.
## 10    9  260. 118228. 164491. 153612. 168733.
## # ... with 76 more rows

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

## # A tibble: 86 x 2
##   age `1969`
##   <dbl> <dbl>
## 1     0  219.
## 2     1  217.
## 3     2  218.
## 4     3  223.
## 5     4  231.
## 6     5  244.
## 7     6  253.
## 8     7  258.
## 9     8  257.
## 10    9  250.
## # ... with 76 more rows

## [1] "Census Males"

## # A tibble: 86 x 6
##   age `1969` `1982` `1992` `2002` `2012`
##   <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>
## 1     0  238. 132765. 167346. 170516. 213504.
## 2     1  232. 129179. 157406. 172094. 209755.
## 3     2  231. 128590. 156277. 168314. 197059.
## 4     3  235. 126778. 156372. 166091. 189028.
## 5     4  242. 125240. 158552. 161218. 179354.
## 6     5  248. 124034. 160467. 157608. 173820.
## 7     6  255. 124161. 162006. 156389. 171476.
## 8     7  265. 123595. 163366. 153571. 168424.
## 9     8  271. 122293. 164072. 152514. 167753.
## 10    9  271. 117099. 160915. 151202. 166974.
## # ... with 76 more rows

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

```
## # A tibble: 86 x 2
##   age `1969`
##   <dbl> <dbl>
## 1     0   231.
## 2     1   229.
## 3     2   230.
## 4     3   234.
## 5     4   240.
## 6     5   251.
## 7     6   259.
## 8     7   262.
## 9     8   261.
## 10    9   255.
## # ... with 76 more rows
```

### *Thiele log-Normal Hump Spline*

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

```
##           log_tau2_logpop           log_tau2_logpop
##           4.965357473           6.576396862
##           log_tau2_logpop           log_tau2_logpop
##           4.990709645           6.510644394
##   log_marginal_lambda_fx   log_marginal_lambda_gx
##           8.295631036           6.899631173
##           log_dispersion           log_dispersion
##           1.239706740           1.187223274
##           log_lambda_tp           tp_slope
##           4.053089638           -0.004206457
##           tp_params_5           tp_params_10
##           0.232969902           0.435940078
##   log_marginal_lambda_phi   log_marginal_lambda_psi
##           8.625842410           8.617562883
##   log_marginal_lambda_lambda   log_marginal_lambda_delta
##           4.010500935           4.275639308
##   log_marginal_lambda_epsilon   log_marginal_lambda_A
##           5.066083540           8.600399367
##           log_marginal_lambda_B           logit_rho_phi
##           4.265930326           -1.657493067
##           logit_rho_psi           logit_rho_lambda
##           -1.657702314           1.971076693
##           logit_rho_delta           logit_rho_epsilon
##           2.992776051           4.290671956
##           logit_rho_A           logit_rho_B
##           -1.657811604           -1.700191923
##           logit_rho_fx_age           logit_rho_fx_time
##           -1.663904851           -1.616685578
##           logit_rho_gx_age           logit_rho_gx_time
##           1.568102198           -1.337095411
##           log_gamma_lambda           log_gamma_delta
##           3.692463119           3.414376557
##           log_gamma_epsilon
##           2.710244437
```

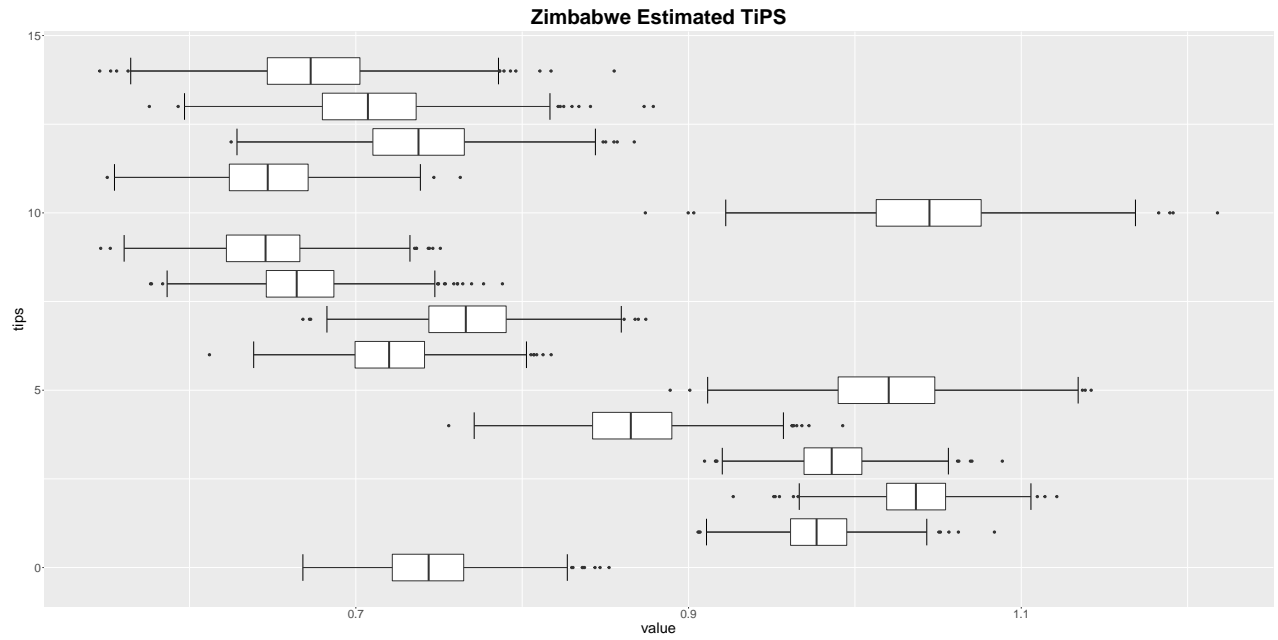


Figure 1: Estimated TiPS

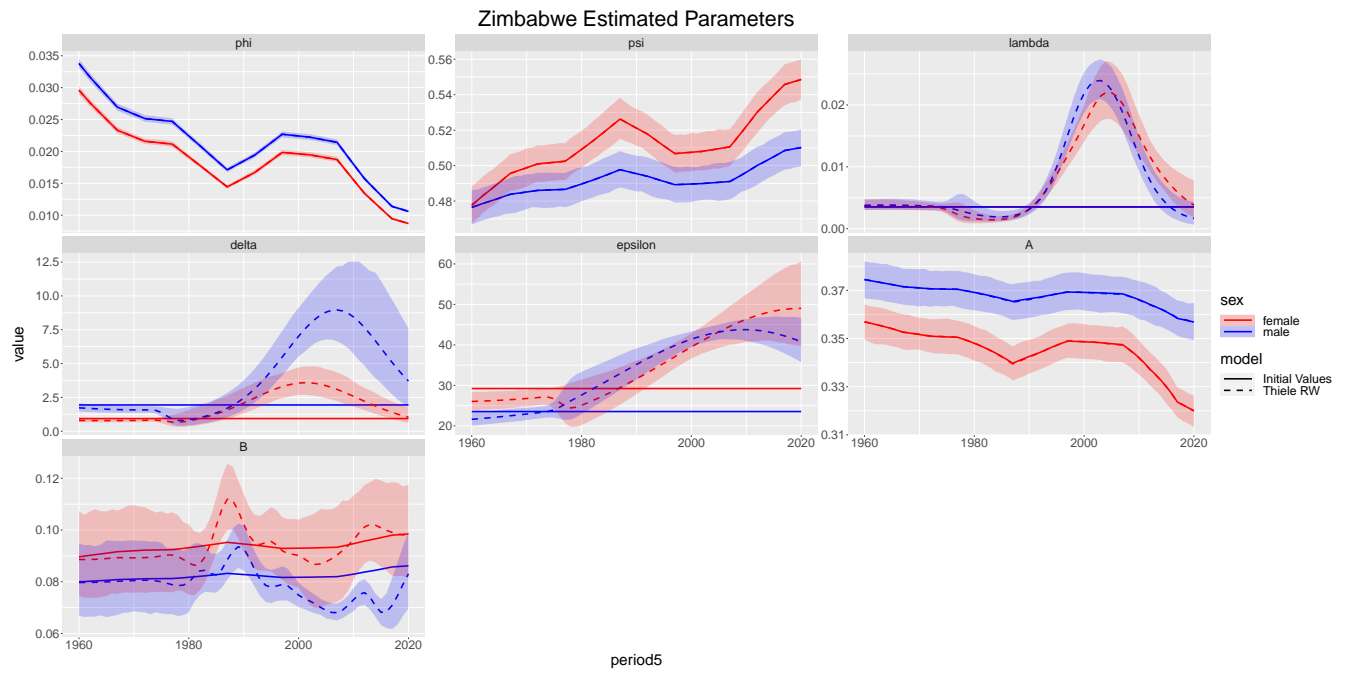


Figure 2: Estimated parameters

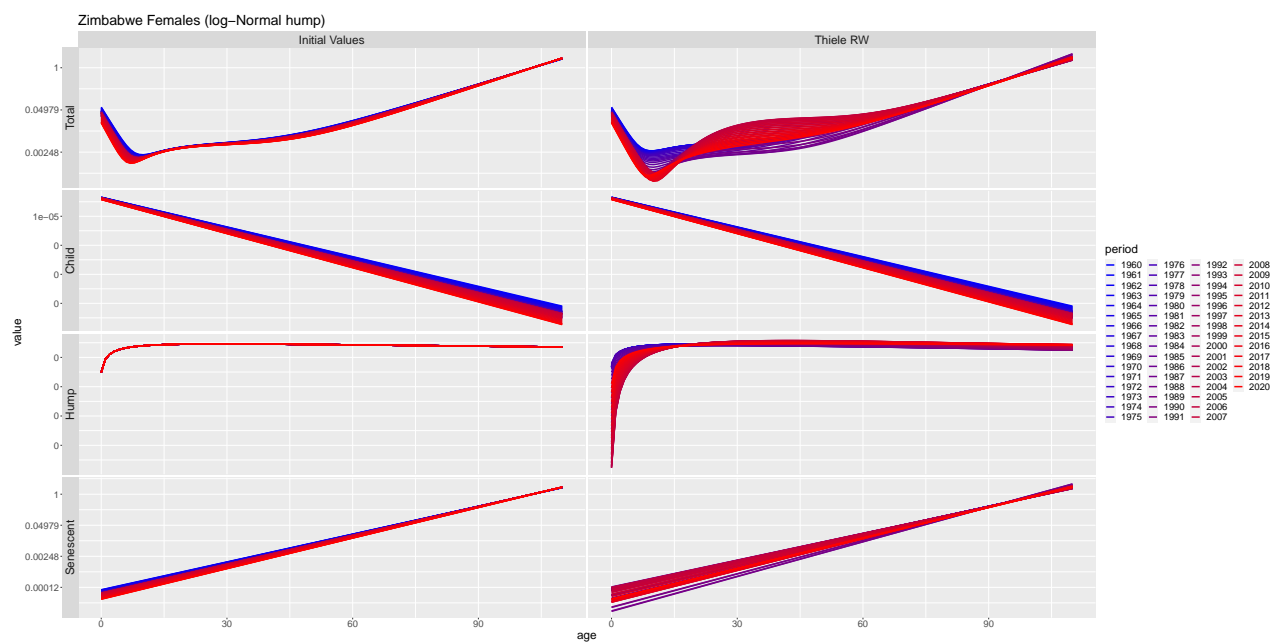


Figure 3: Thiele Decomposed

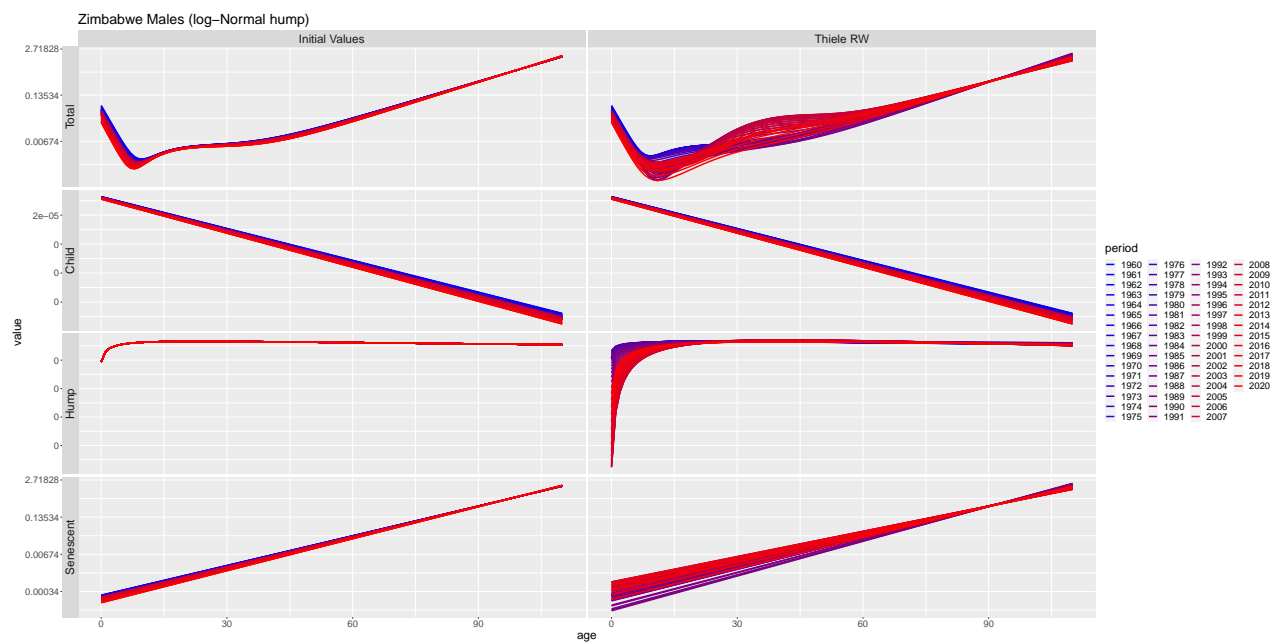


Figure 4: Thiele Decomposed

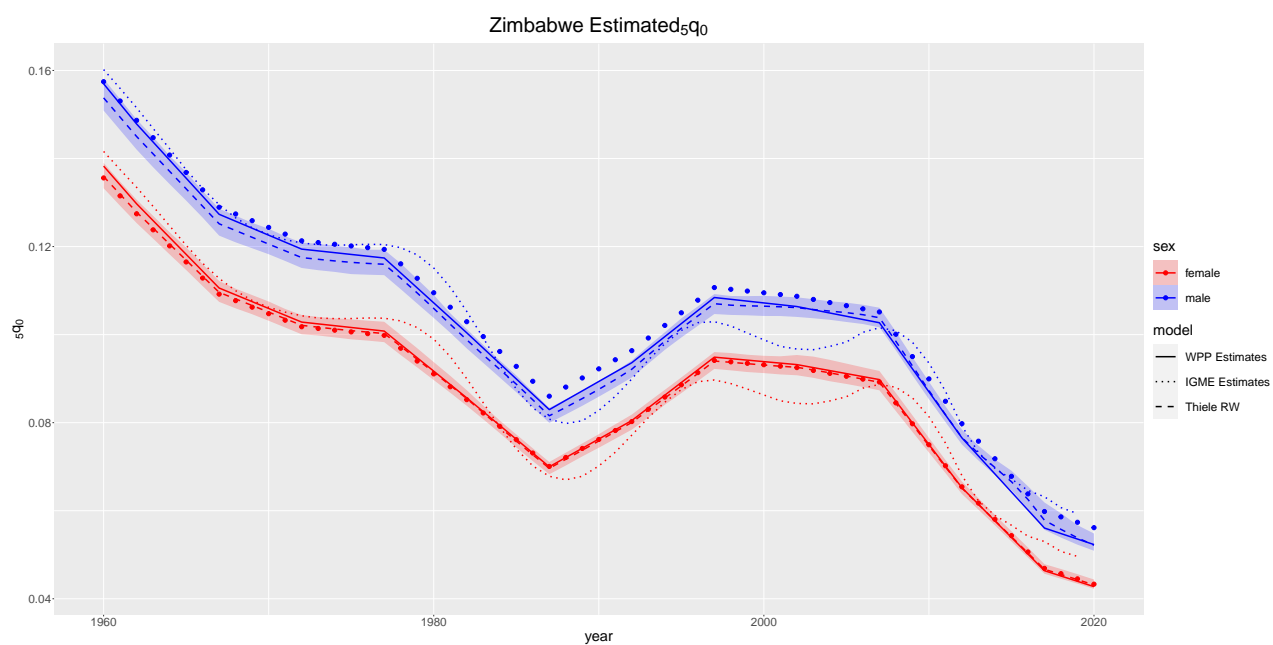


Figure 5: Estimated  ${}_5q_0$

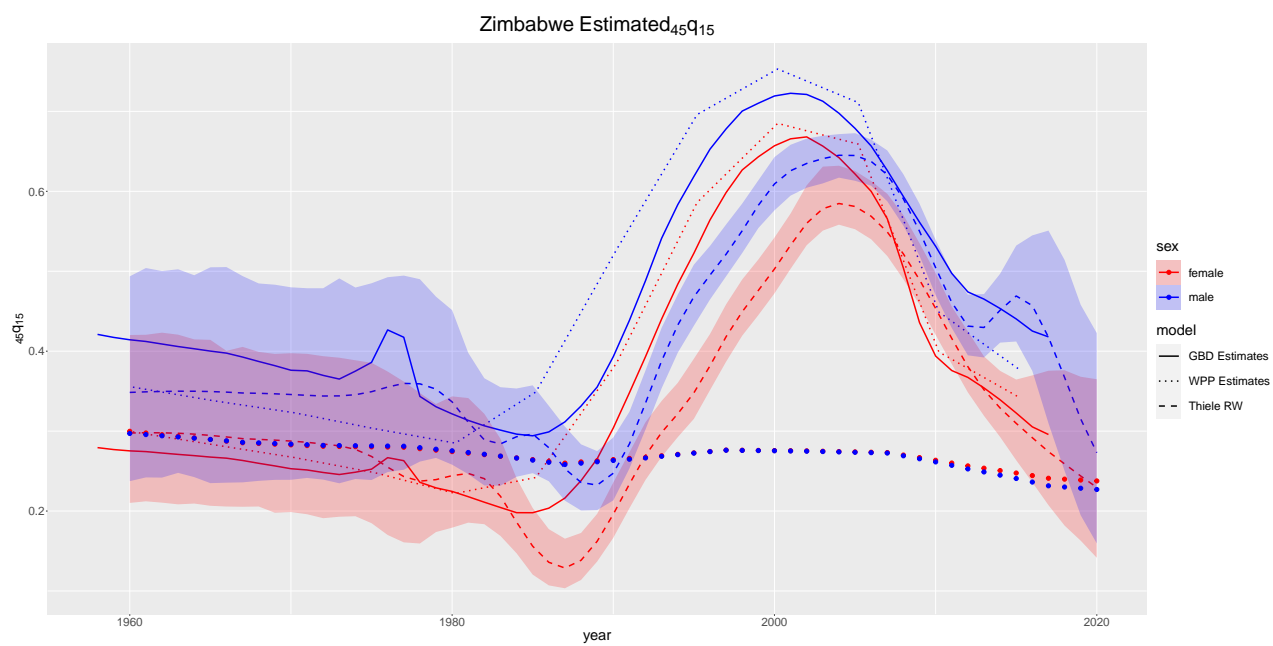


Figure 6: Estimated  ${}_{45}q_{15}$

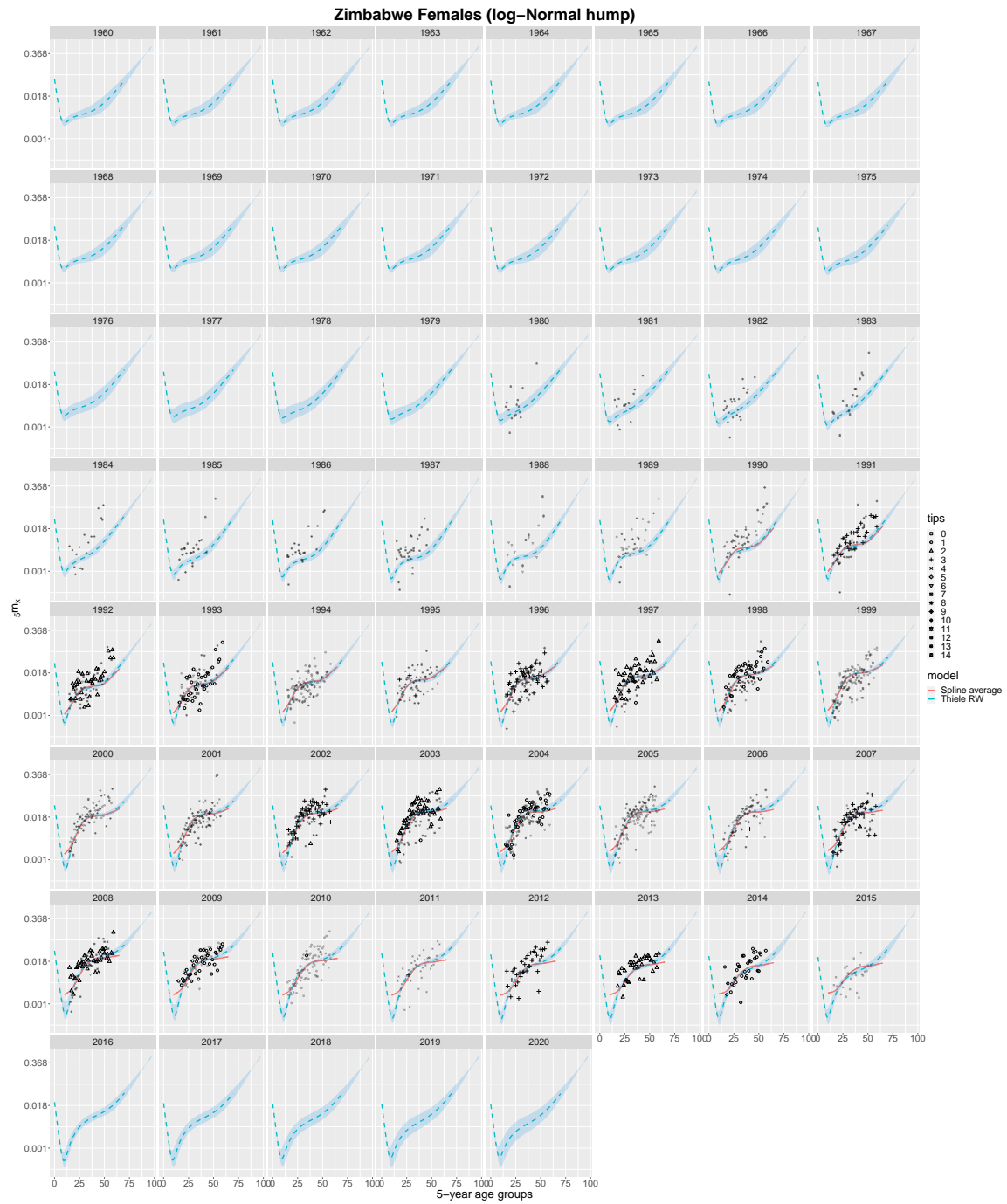


Figure 7: Mortality Schedules

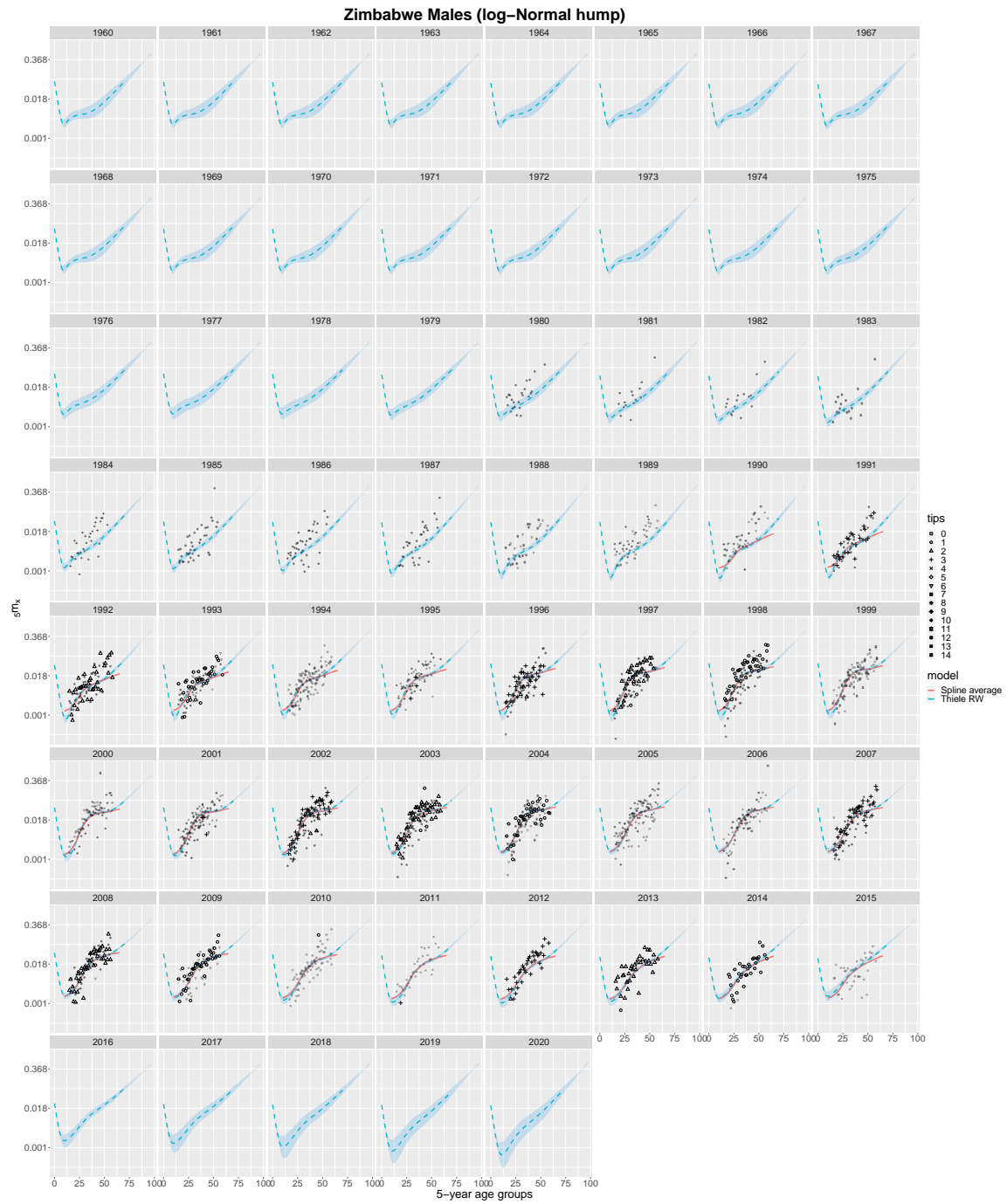


Figure 8: Mortality Schedules

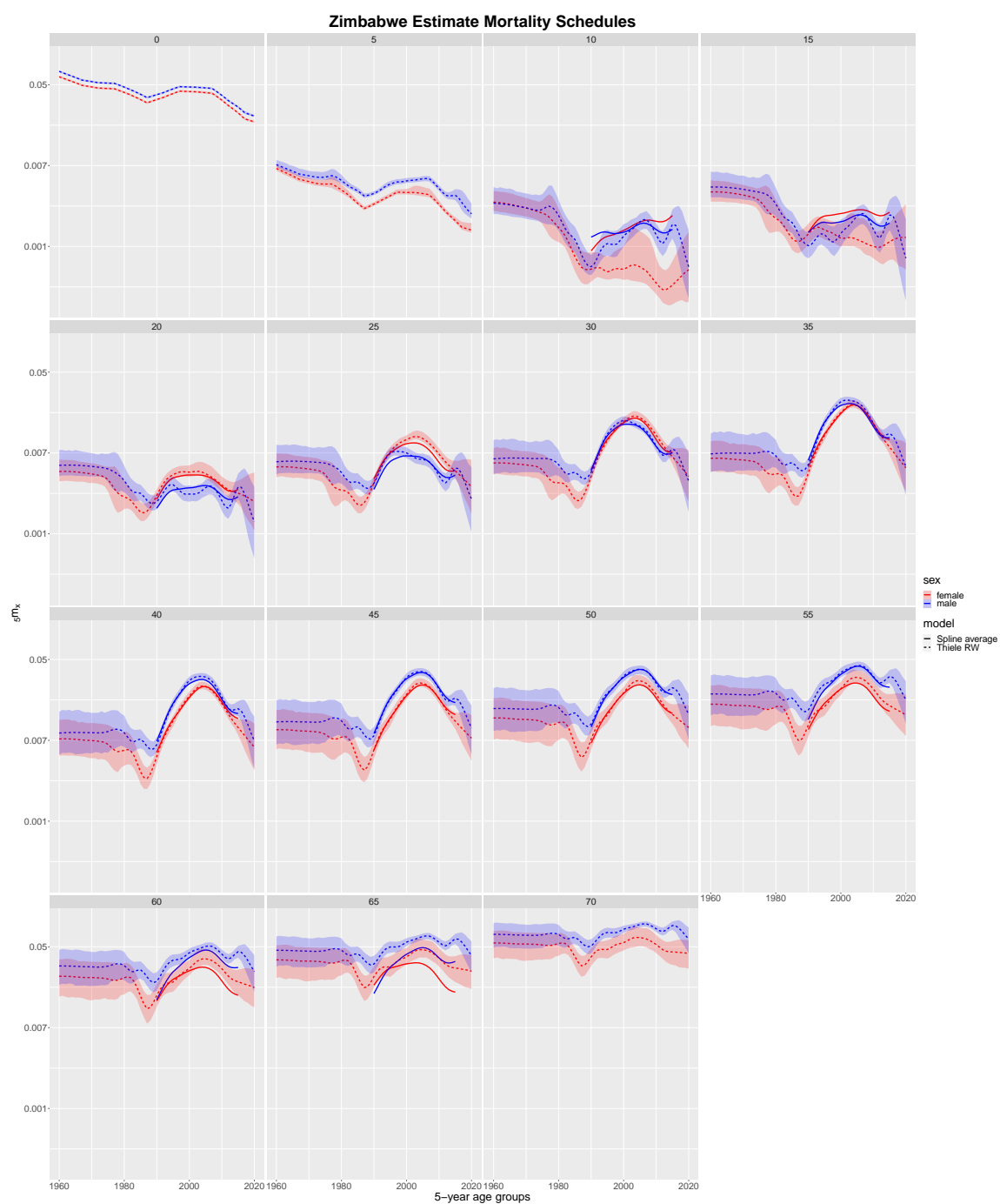


Figure 9: Mortality Schedules



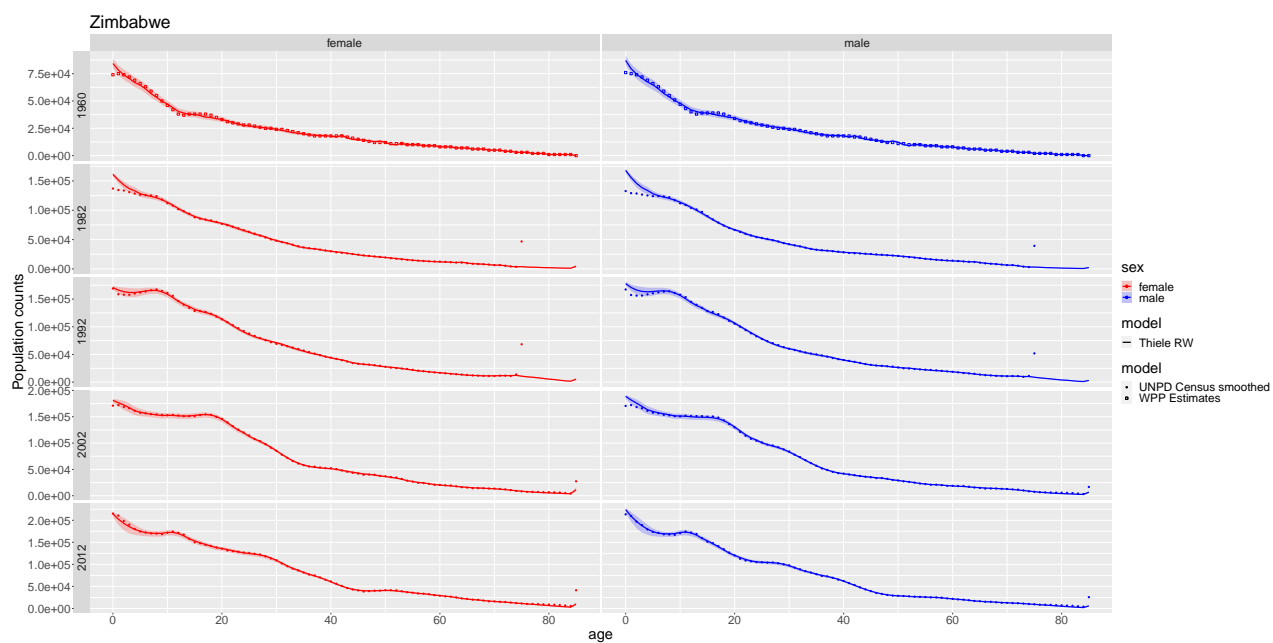


Figure 10: Population

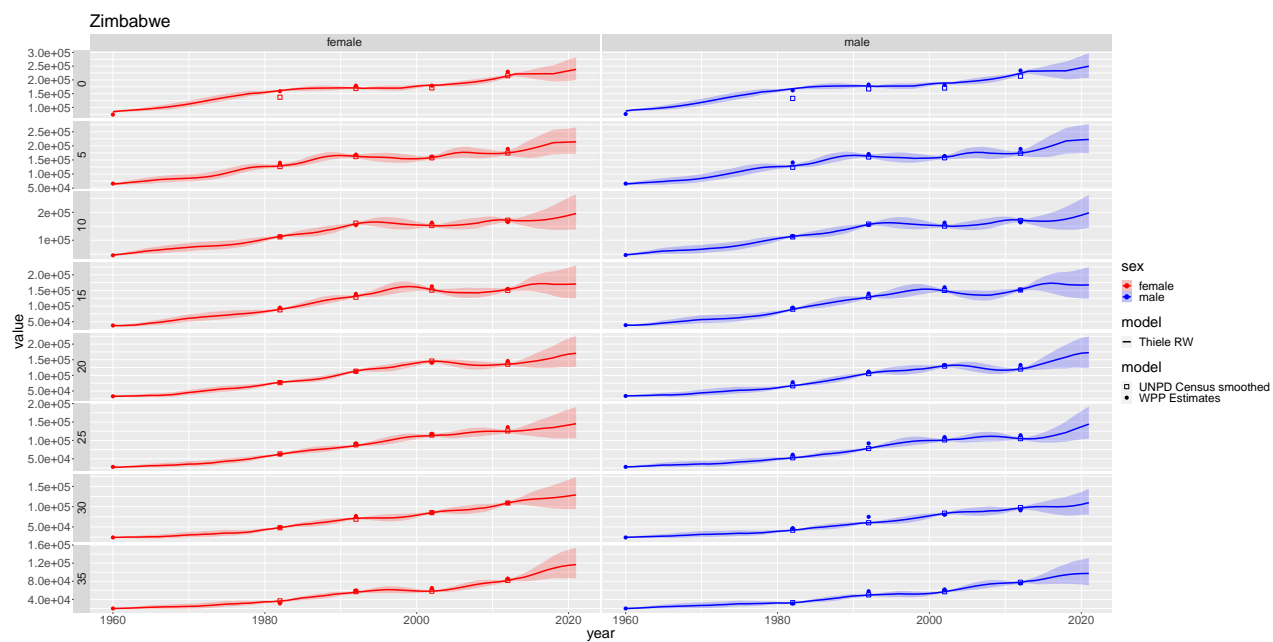


Figure 11: Population

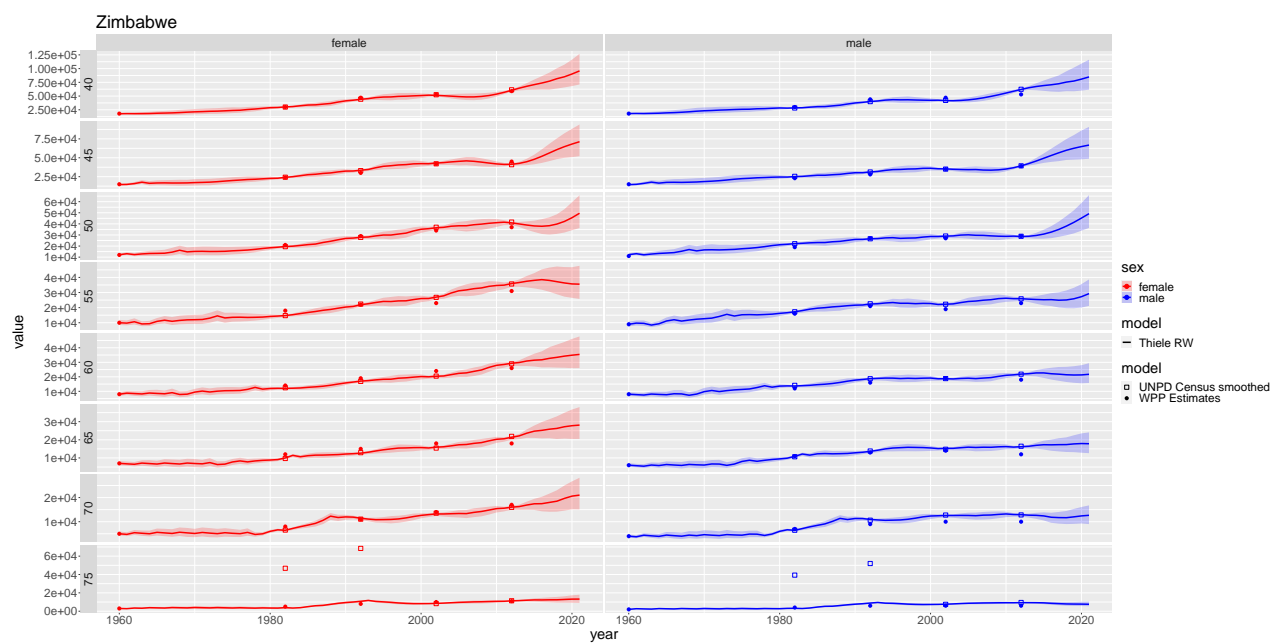


Figure 12: Population

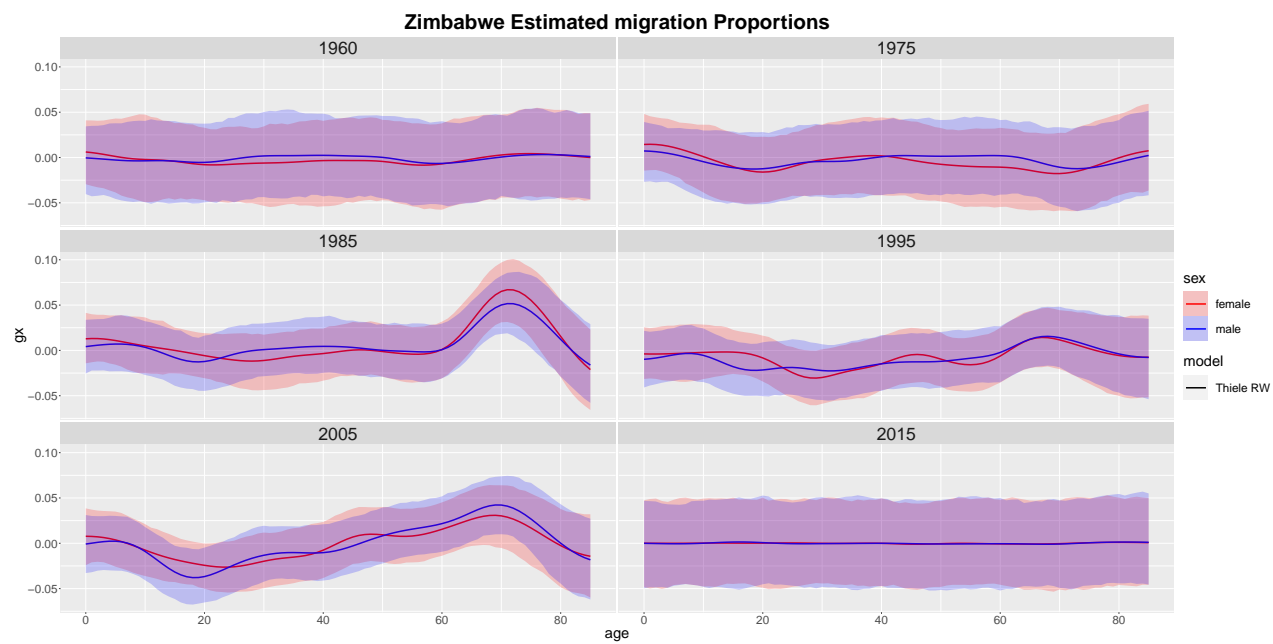


Figure 13: Migration

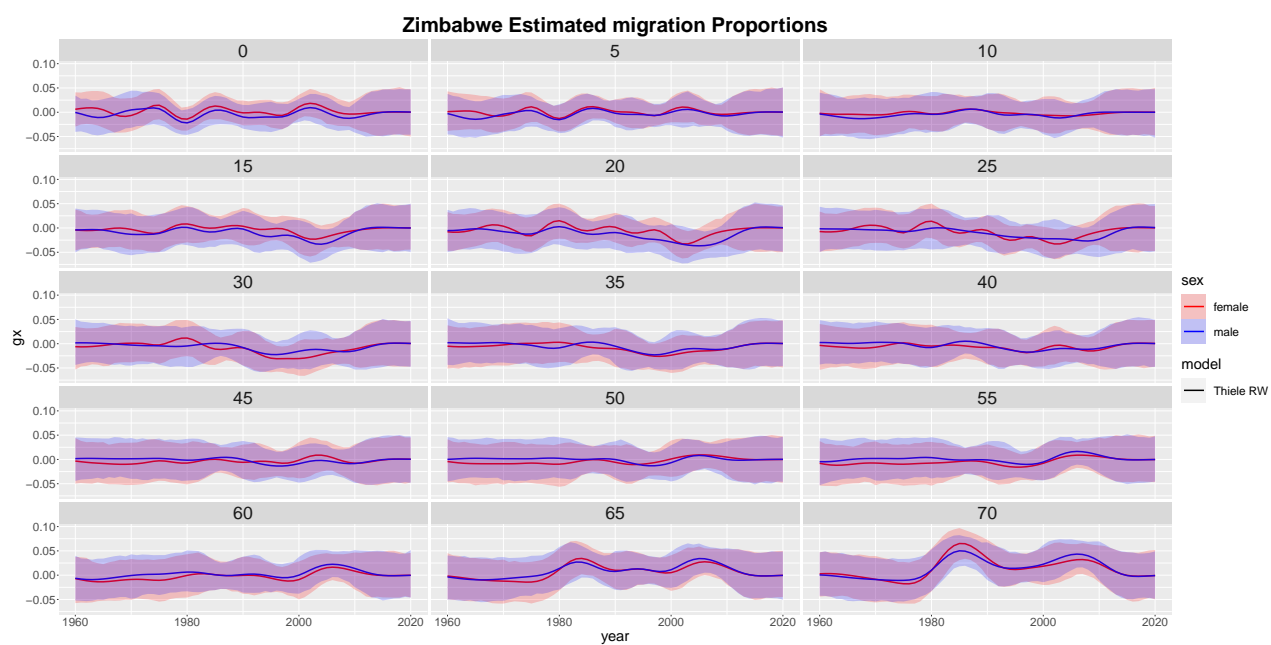


Figure 14: Migration

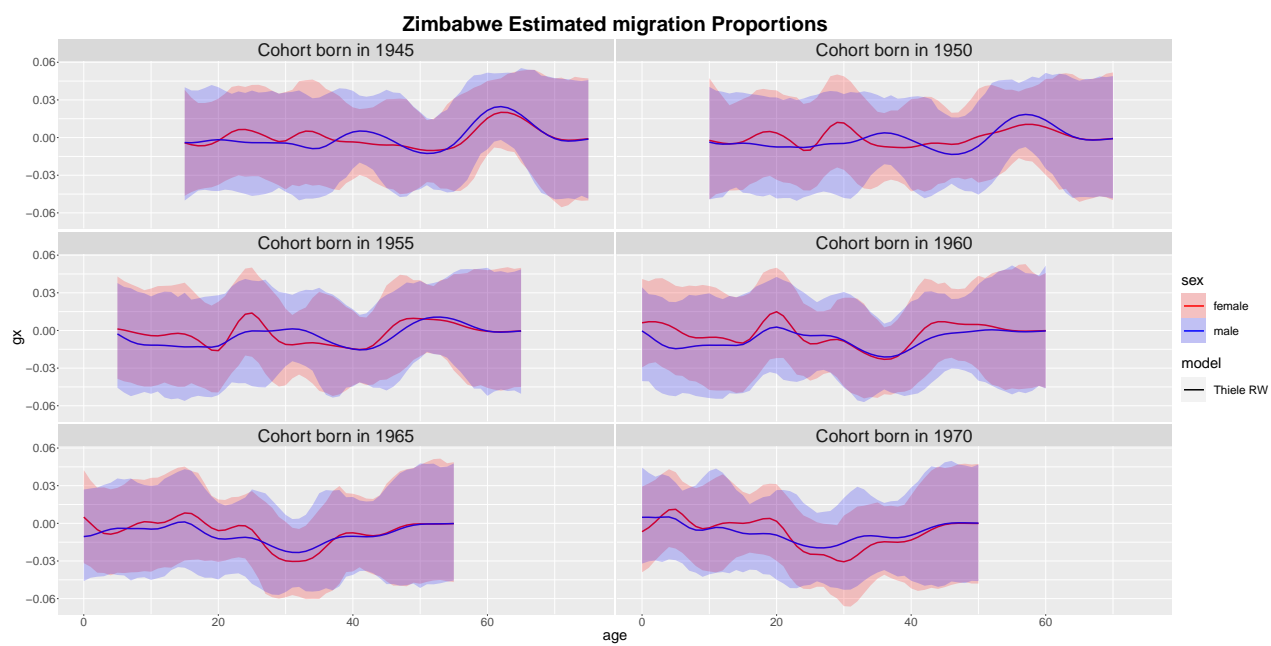


Figure 15: Migration

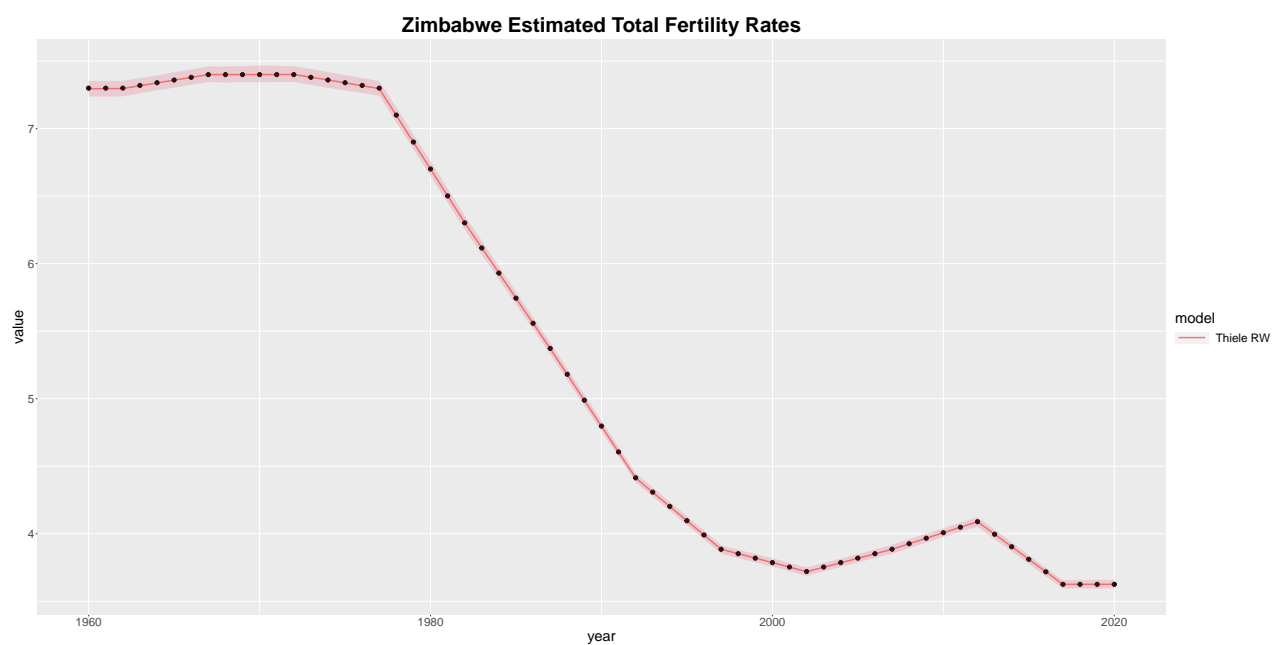


Figure 16: Total Fertility

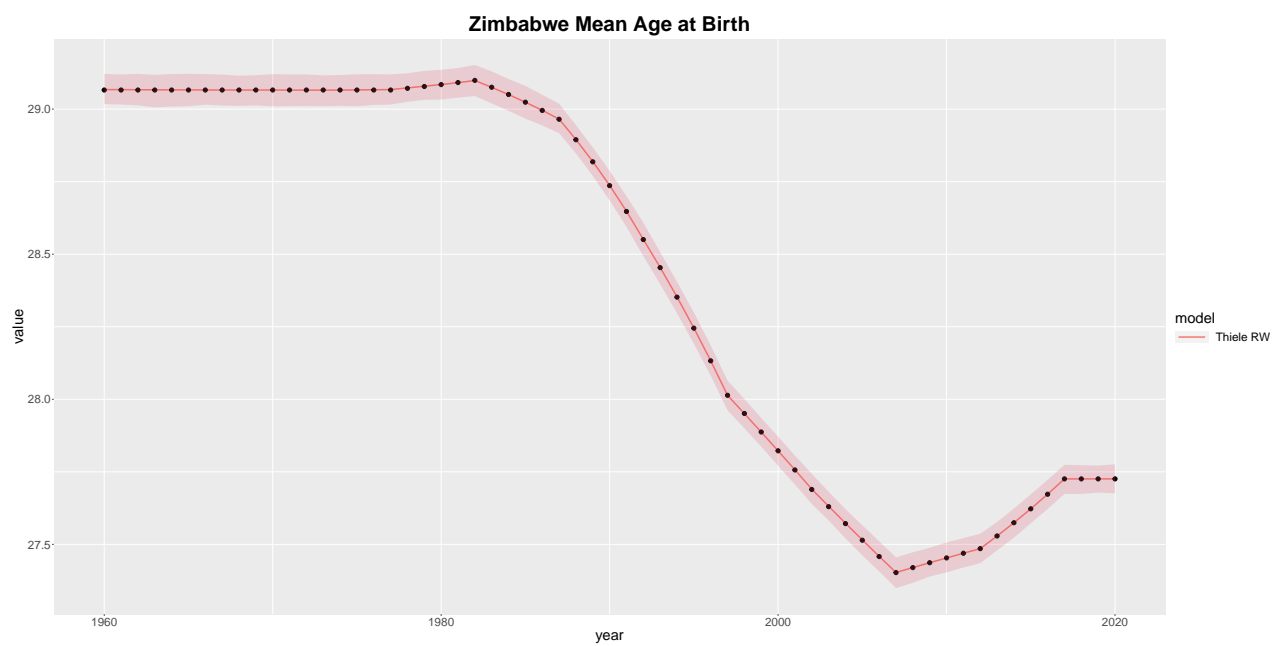


Figure 17: Mean age at births

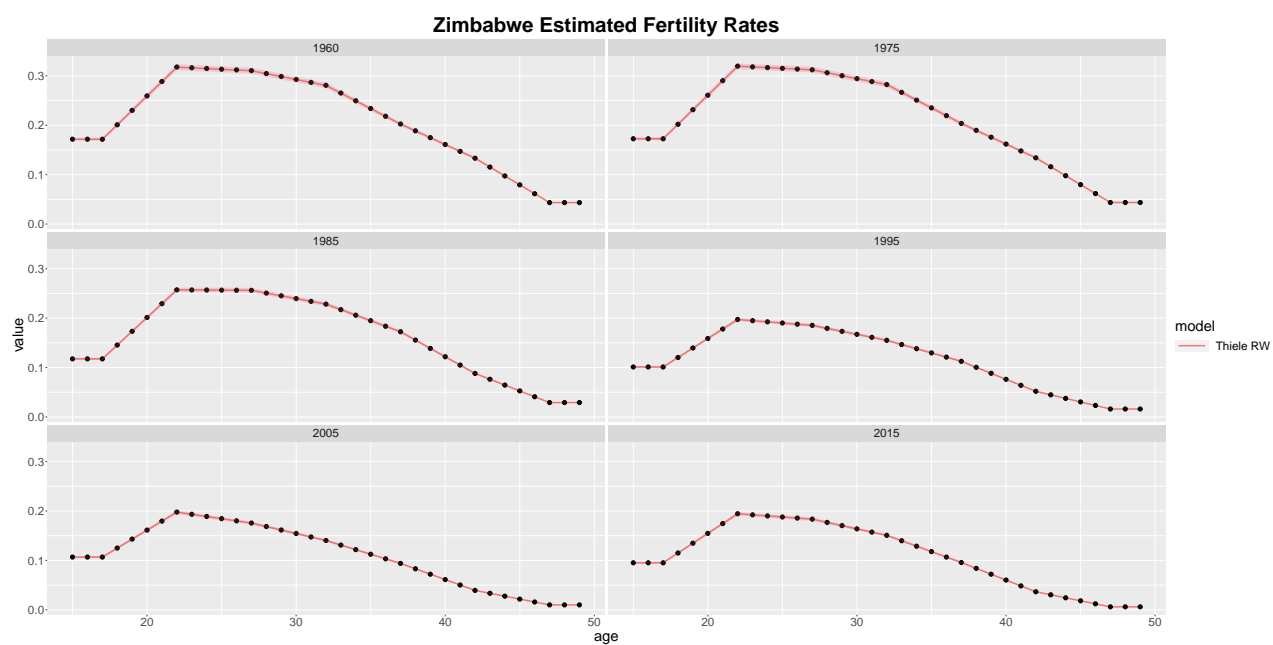


Figure 18: Fertility

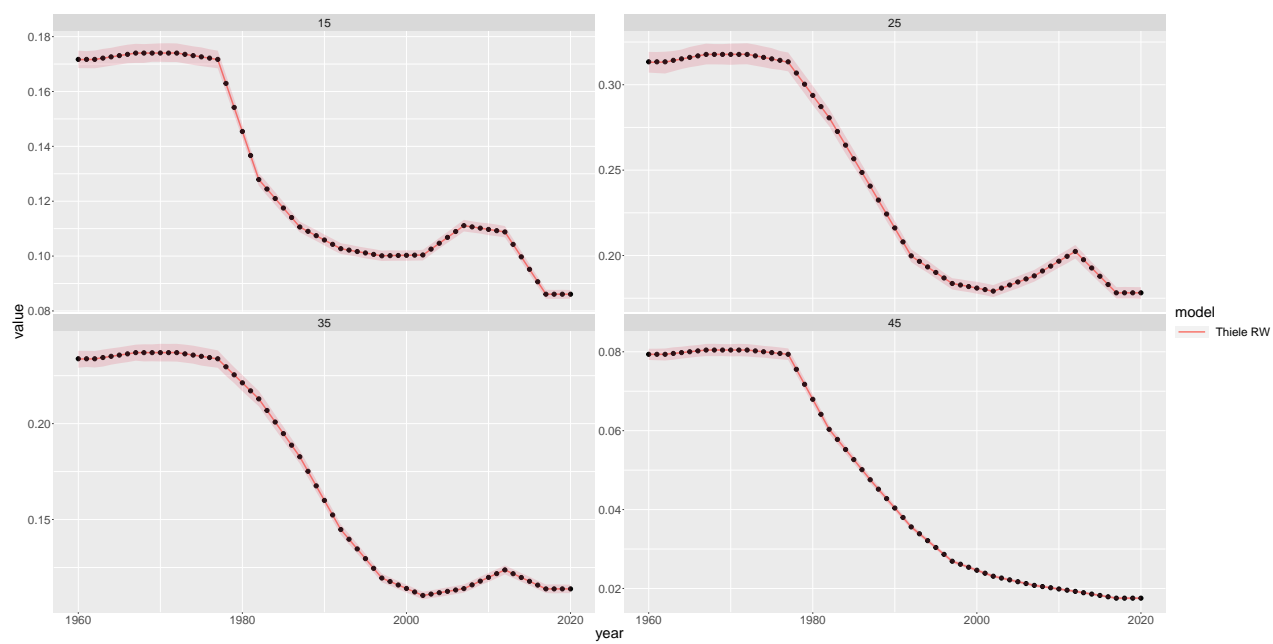


Figure 19: Fertility