Tanzania

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

## # A tibble: 81 x 3
##      age  `1988`  `2012`
##    <dbl>   <dbl>   <dbl>
## 1      0 421414. 751563.
## 2      1 363583. 708100.
## 3      2 384979. 721738.
## 4      3 390569. 718712.
## 5      4 389974. 716843.
## 6      5 389580. 710960.
## 7      6 378466. 691003.
## 8      7 363961. 672103.
## 9      8 344911. 647733.
## 10     9 327565. 630221.
## # ... with 71 more rows

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

## # A tibble: 17 x 3
##      age   `1978`   `2002`
##    <dbl>    <dbl>    <dbl>
## 1      0 1620439. 2834362.
## 2      5 1369953. 2539282.
## 3     10 1089957. 2202643.
## 4     15  883300. 1906276.
## 5     20  766631. 1704896.
## 6     25  663604. 1468123.
## 7     30  539946. 1155183.
## 8     35  436695.  877869.
## 9     40  364001.  677439.
## 10    45  302415.  536720.
## 11    50  240309.  429372.
## 12    55  190693.  343468.
## 13    60  160488.  290374.
## 14    65  124638.  241783.
## 15    70   88231.  182349.
## 16    75   54700.  108149.
## 17    80   72469.  162567.

## [1] "Census Males"

## # A tibble: 81 x 3
##      age  `1988`  `2012`
##    <dbl>   <dbl>   <dbl>
## 1      0 416380. 747826.
## 2      1 360734. 710793.
## 3      2 379475. 722953.
## 4      3 385481. 722477.
## 5      4 384911. 721532.
## 6      5 384699. 714653.
## 7      6 374894. 692676.
```

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## 8      7 363557. 673655.
## 9      8 346283. 647036.
## 10     9 329693. 628063.
## # ... with 71 more rows

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

## # A tibble: 17 x 3
##      age  `1978`   `2002`
##    <dbl>   <dbl>    <dbl>
## 1      0 1557979. 2830545
## 2      5 1351767. 2552983
## 3     10 1091463. 2200531
## 4     15  833976. 1789534
## 5     20  656206. 1468786
## 6     25  566192. 1277250.
## 7     30  491229. 1077299.
## 8     35  414514.  851456
## 9     40  350720.  660490.
## 10    45  298970.  513774.
## 11    50  248216.  406410.
## 12    55  204132.  324059.
## 13    60  168723.  269689
## 14    65  131270.  223754.
## 15    70   99263.  171833
## 16    75   66150.  113205
## 17    80   88783.  145641
```

Thiele log-Normal Hump Spline

```
## [1] "false convergence (8)"

##       log_tau2_logpop      log_tau2_logpop      log_tau2_logpop      log_tau2_logpop            log
##          3.151330e+00         2.078915e+00         3.151330e+00         2.078915e+00             4
##       log_dispersion       log_dispersion        log_lambda_tp             tp_slope             
##          1.300000e+00         1.300000e+00         5.000000e+00        -2.879843e-12             3
##       log_lambda_phi       log_lambda_psi         log_lambda_A         log_lambda_B         log_la
##          8.356928e+00         8.356928e+00         8.356928e+00         8.356928e+00             4
##    log_lambda_epsilon
##          4.764865e+00
```
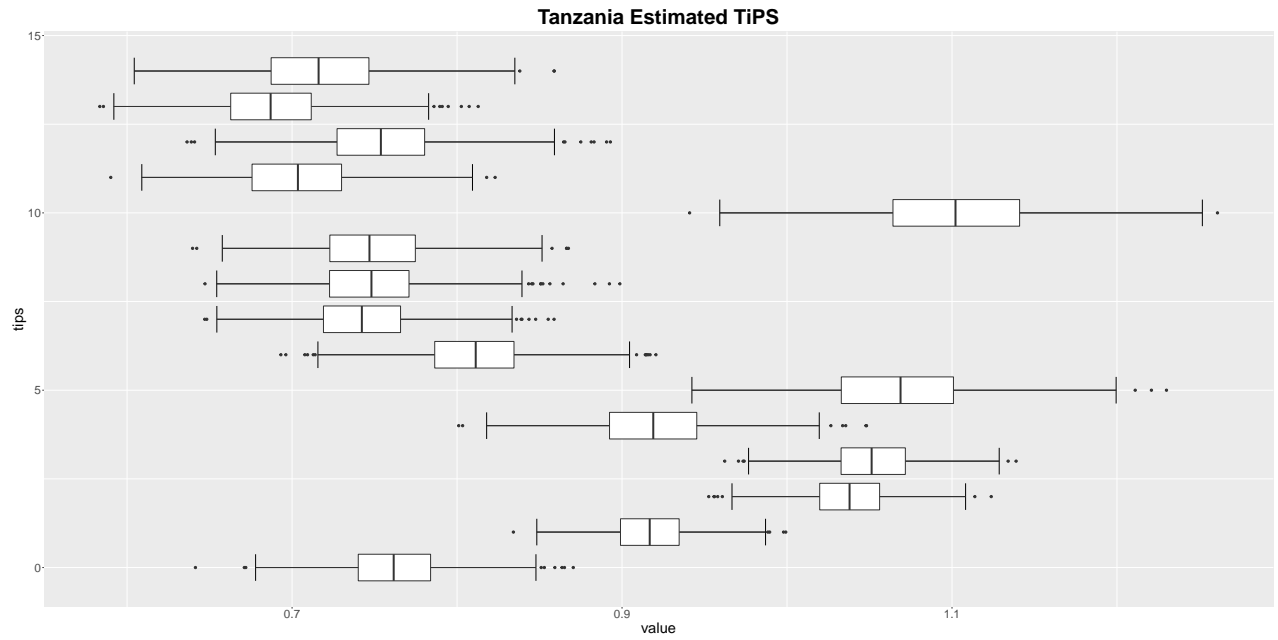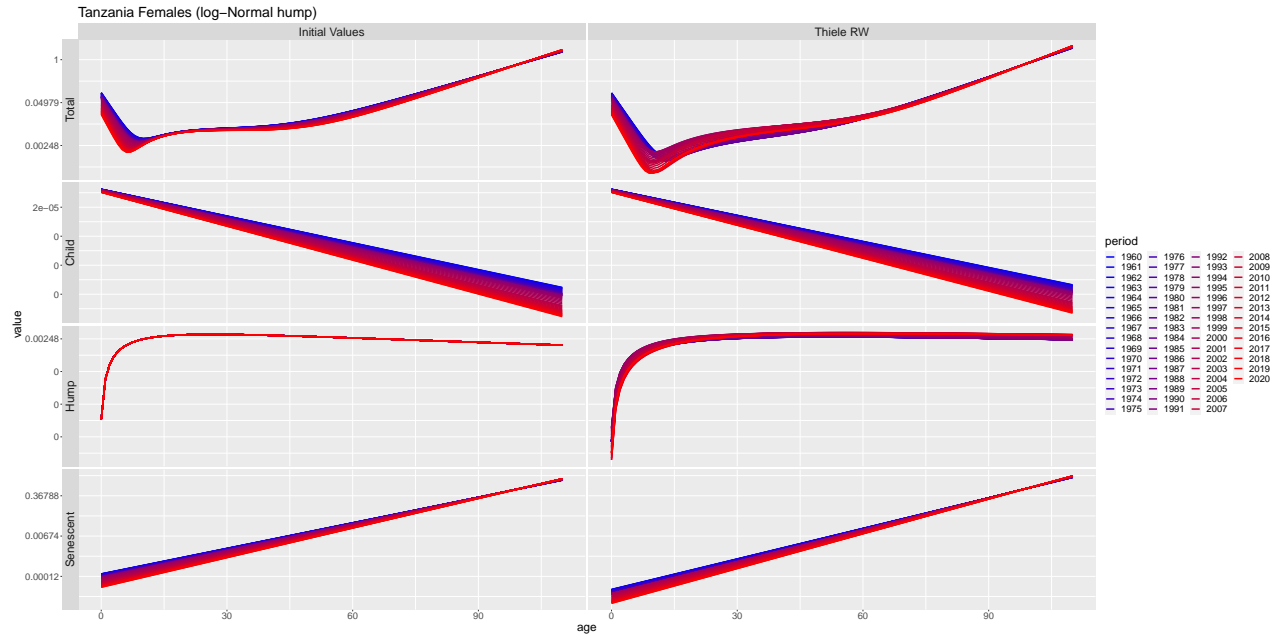
Figure 1: Estimated TiPS
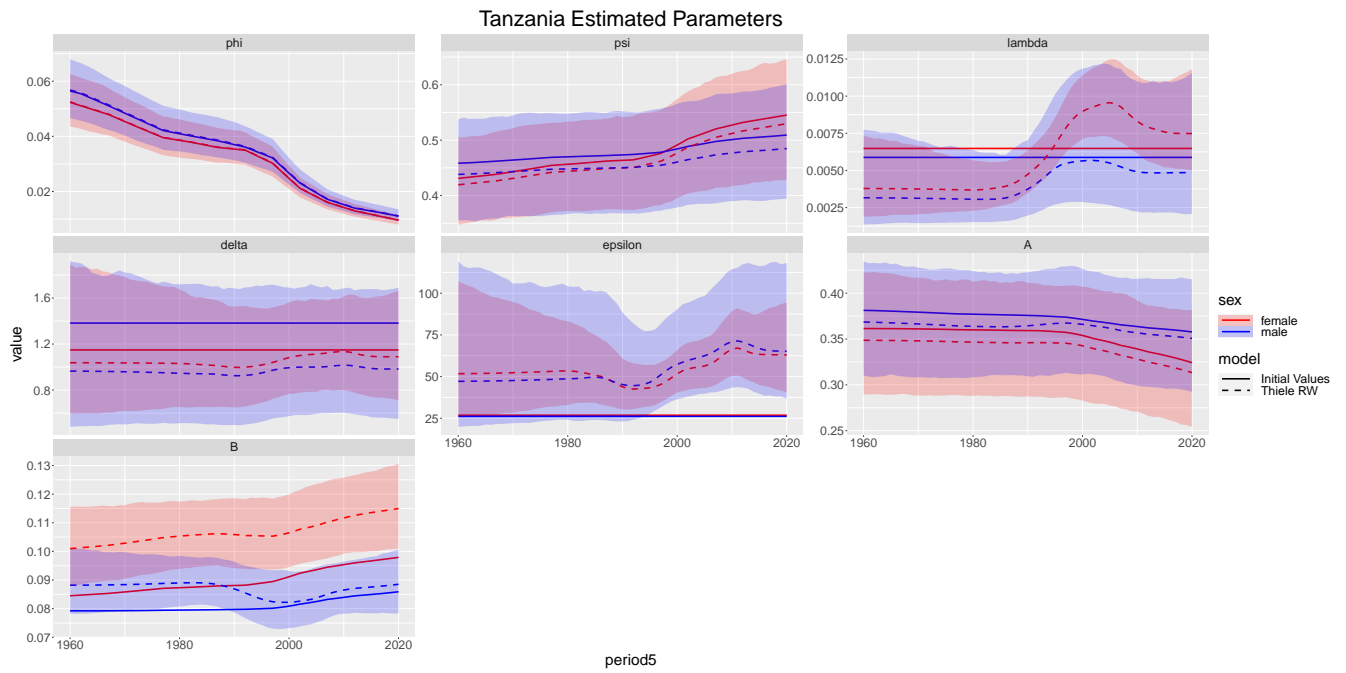
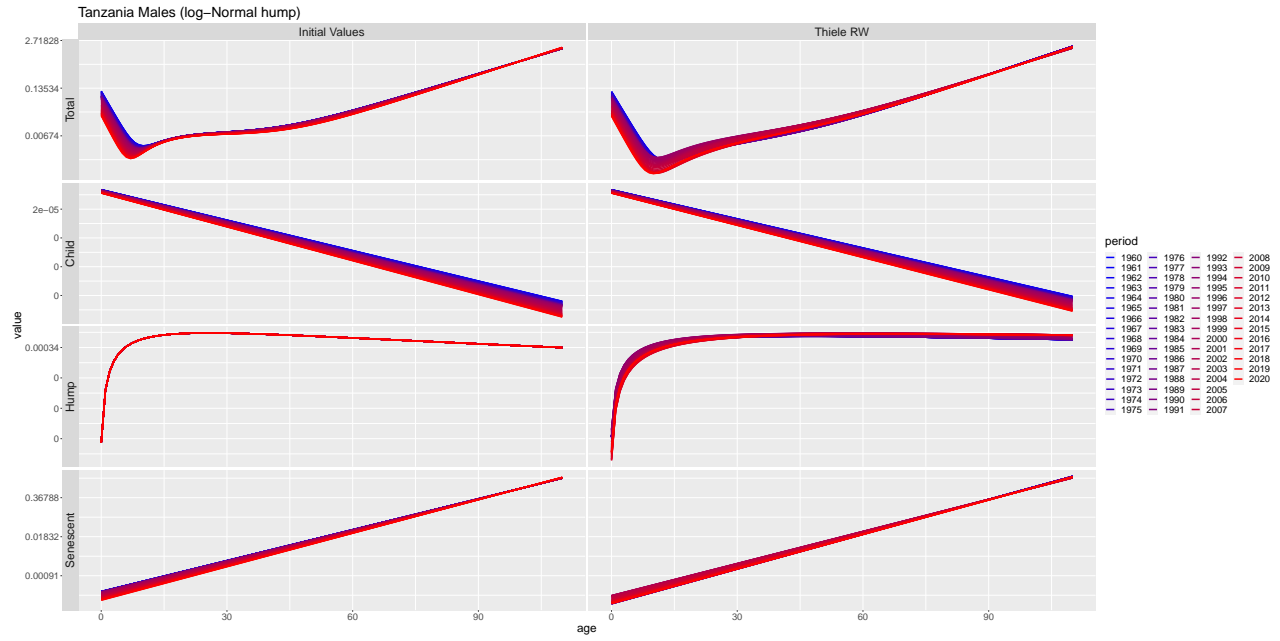Figure 2: Estimated parameters

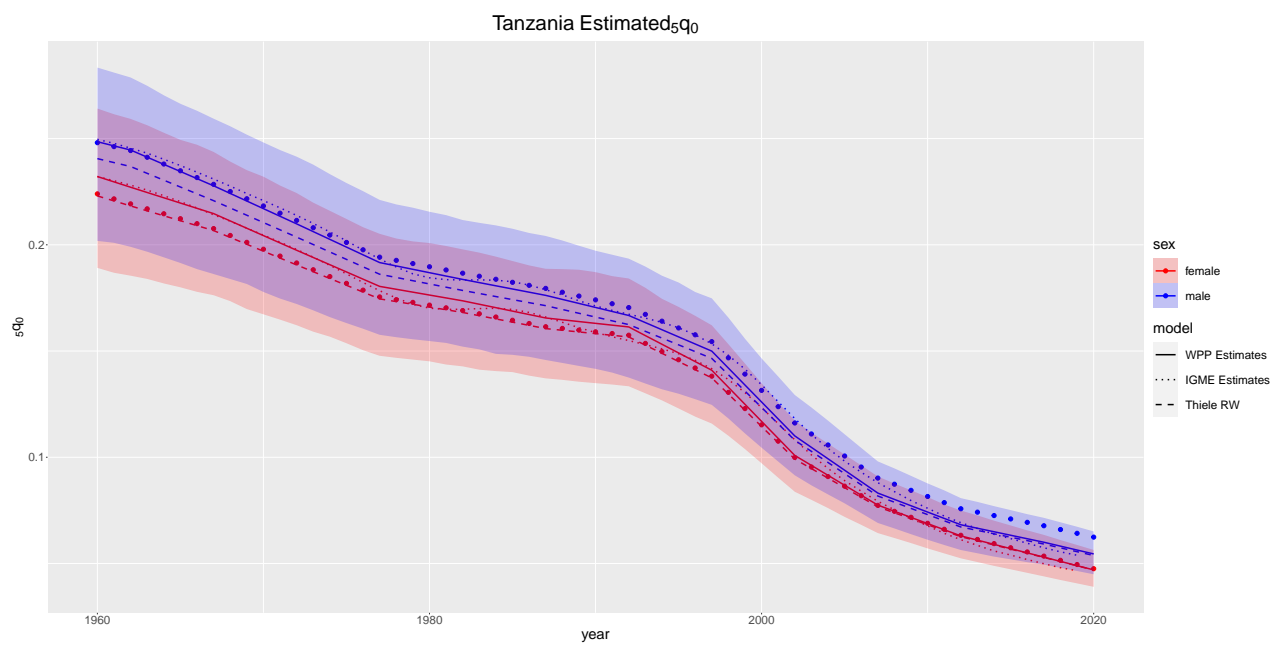Figure 3: Thiele Decomposed

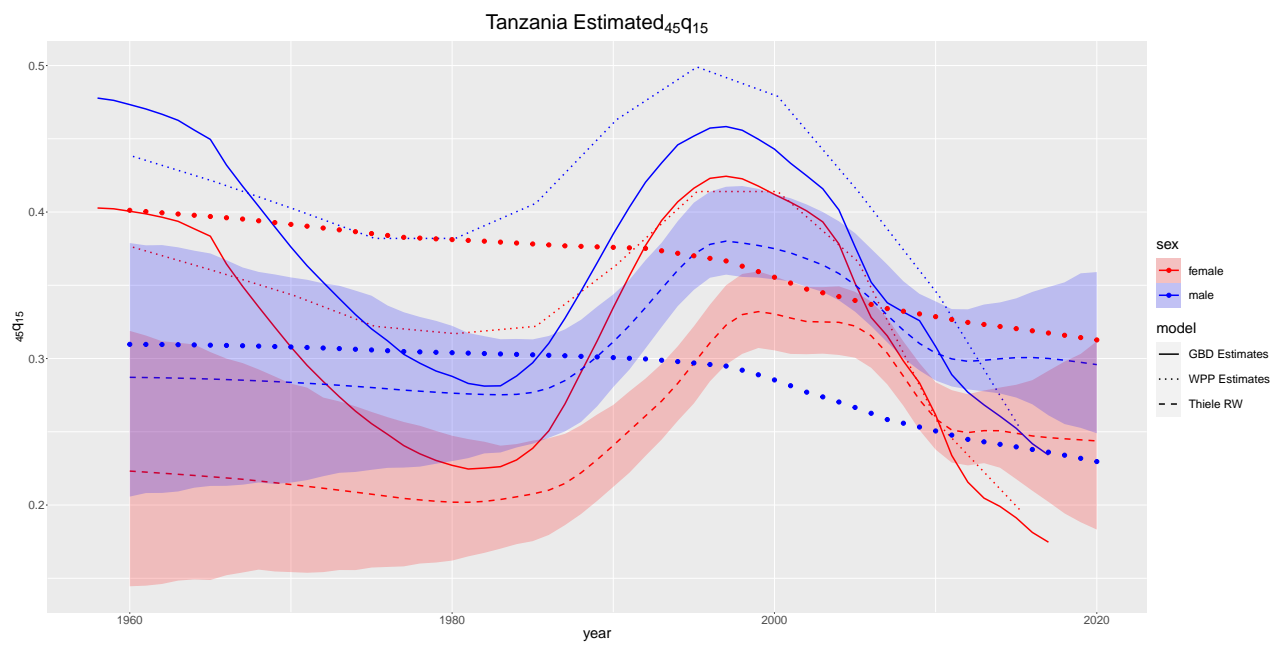Figure 4: Thiele Decomposed

Figure 5: Estimated $_5q_0$
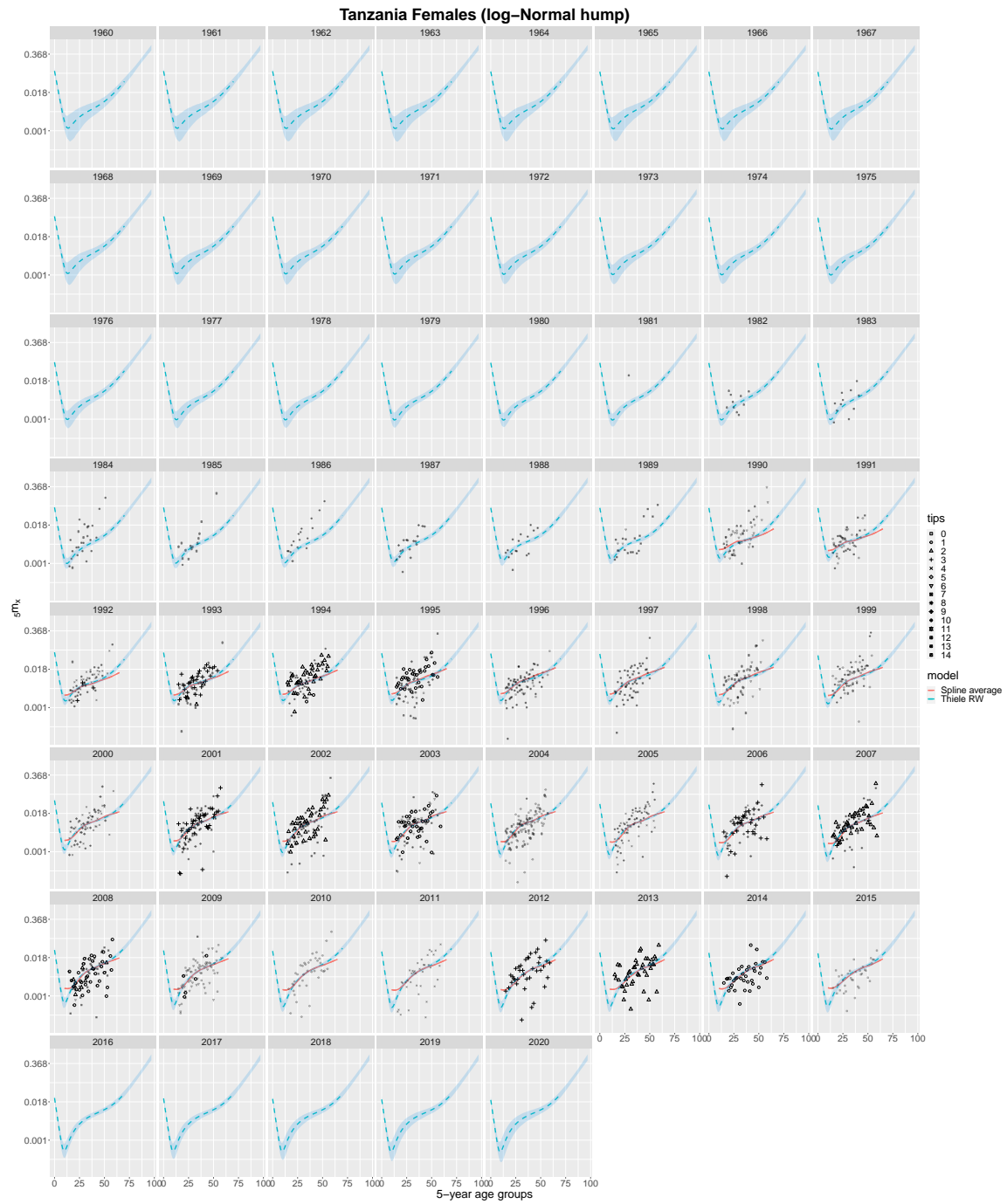

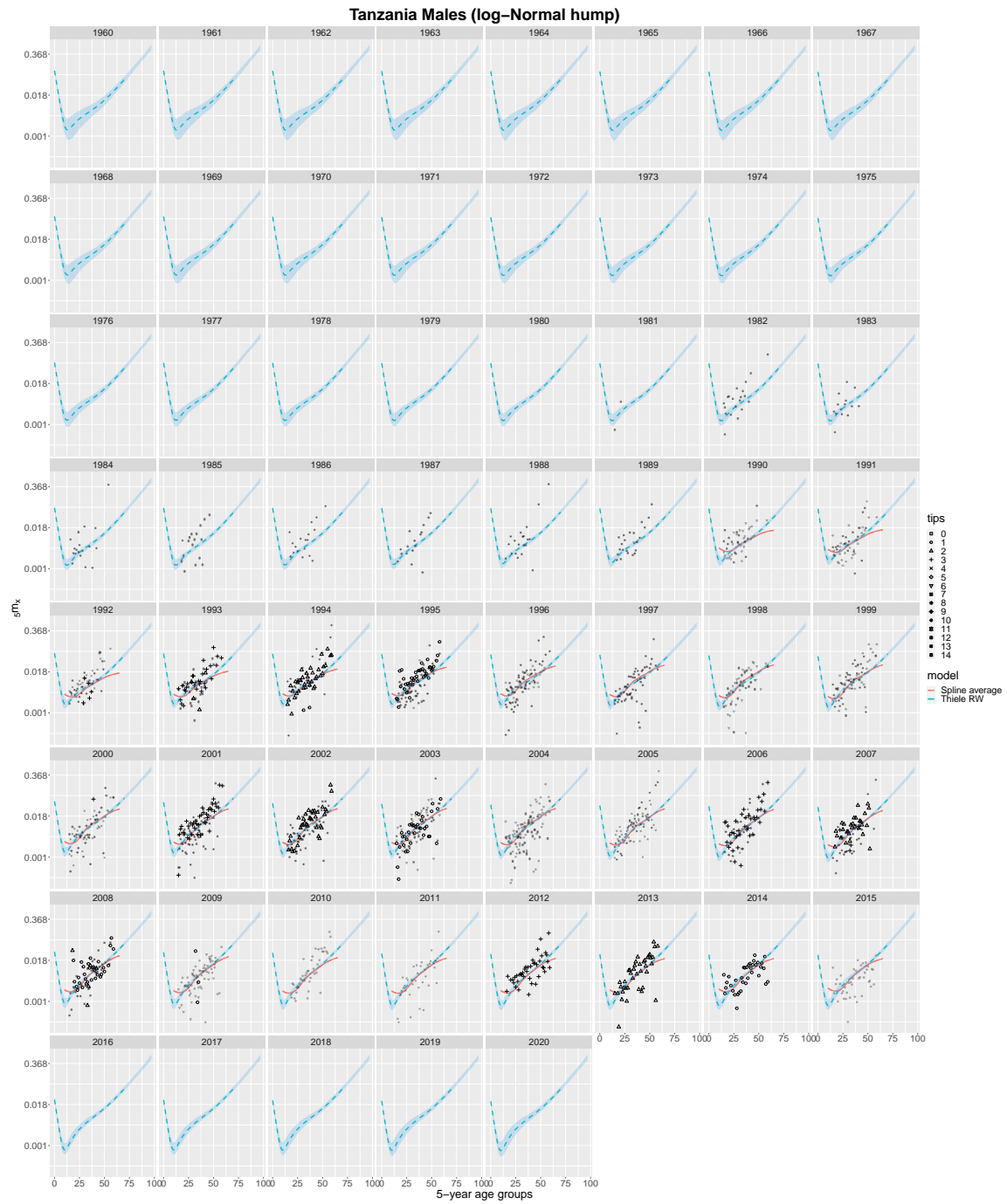Figure 6: Estimated $_{45}q_{15}$

Figure 7: Mortality Schedules
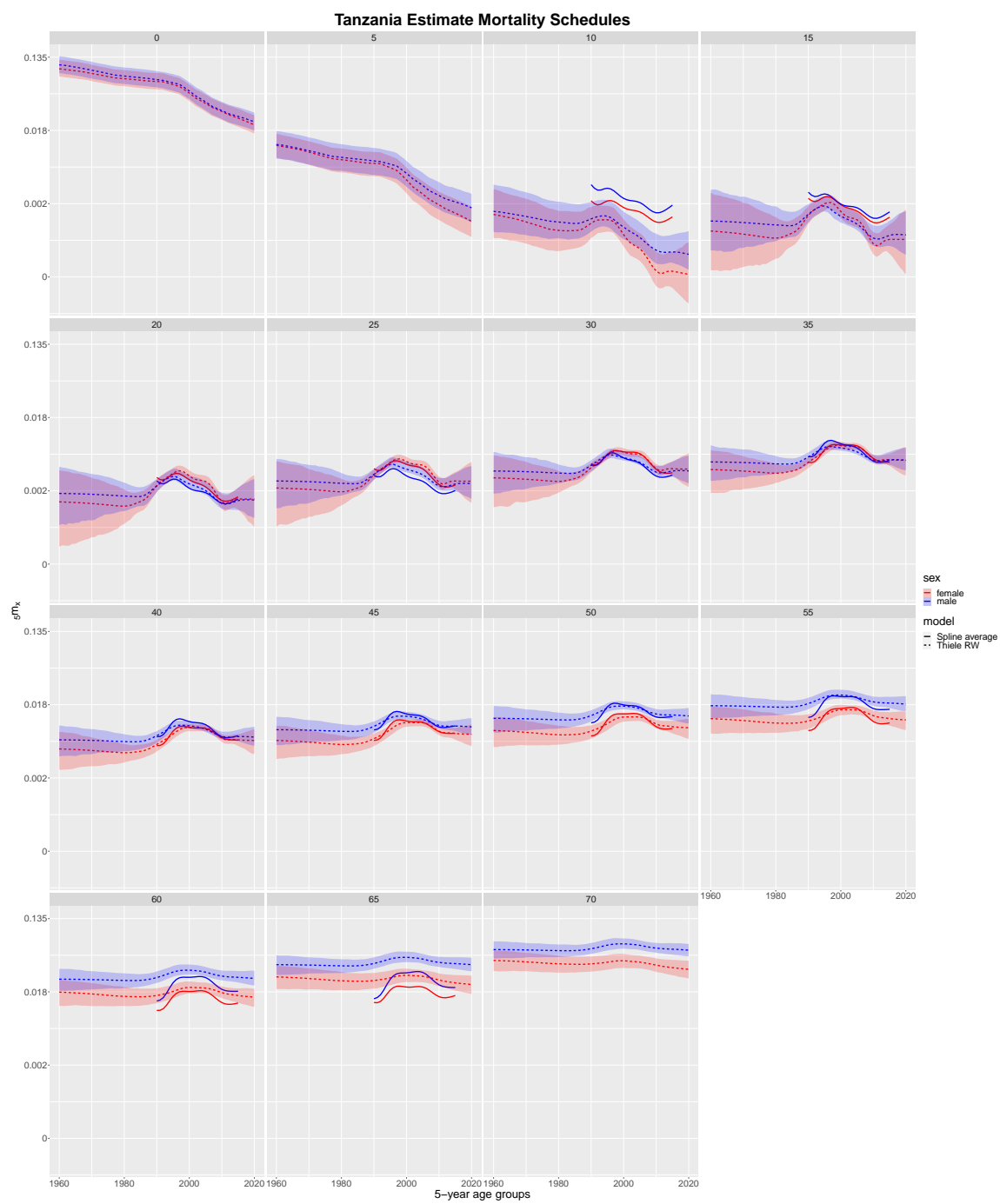
Figure 8: Mortality Schedules
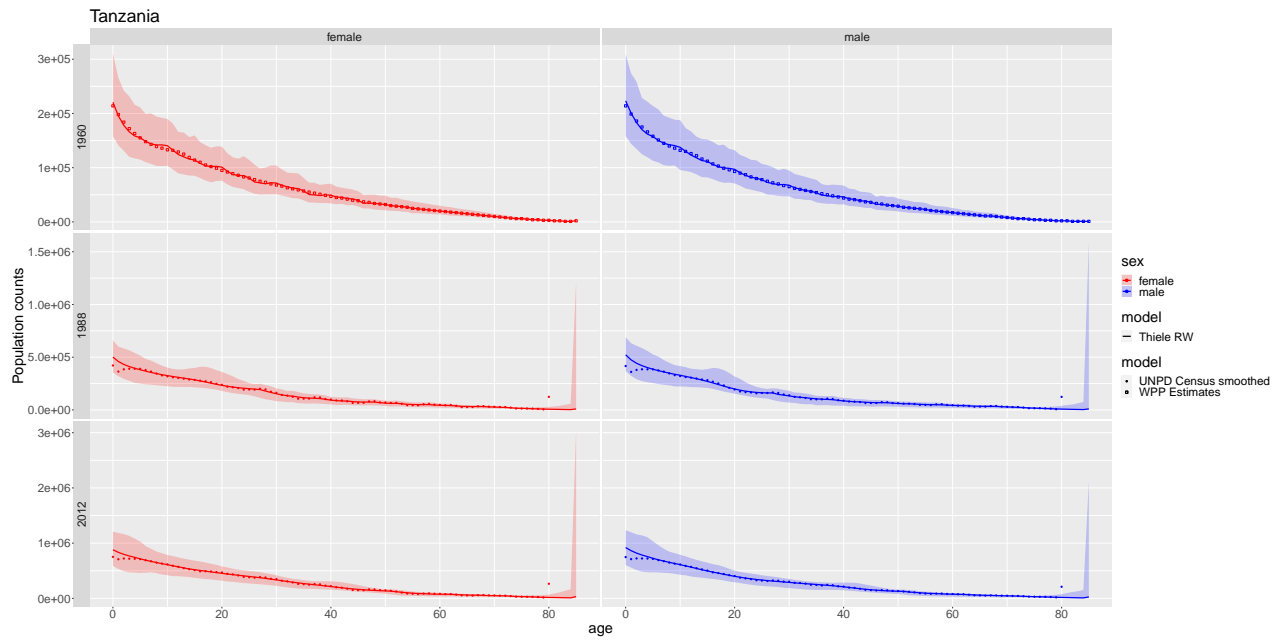
Figure 9: Mortality Schedules
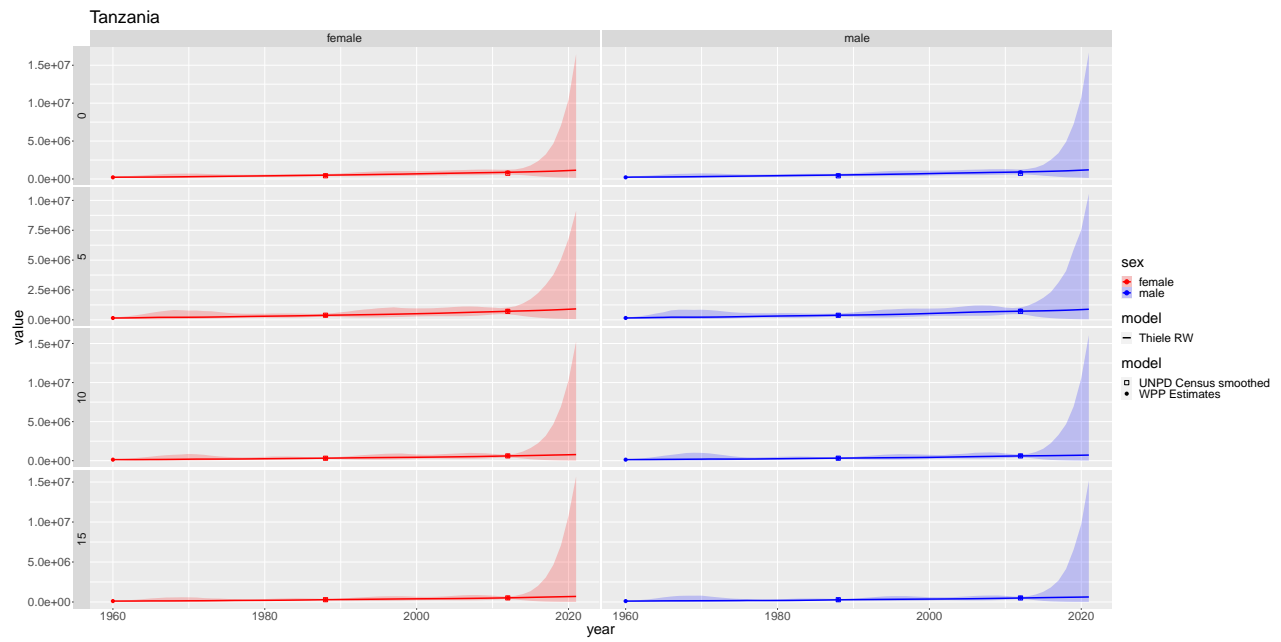
Figure 10: Population
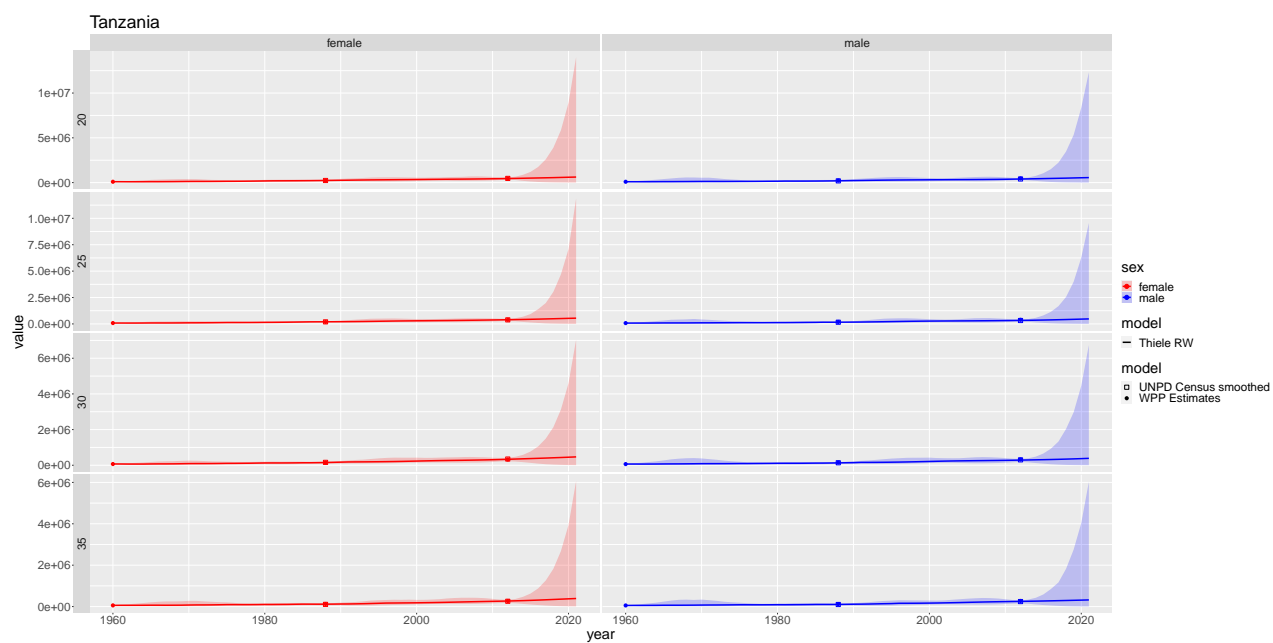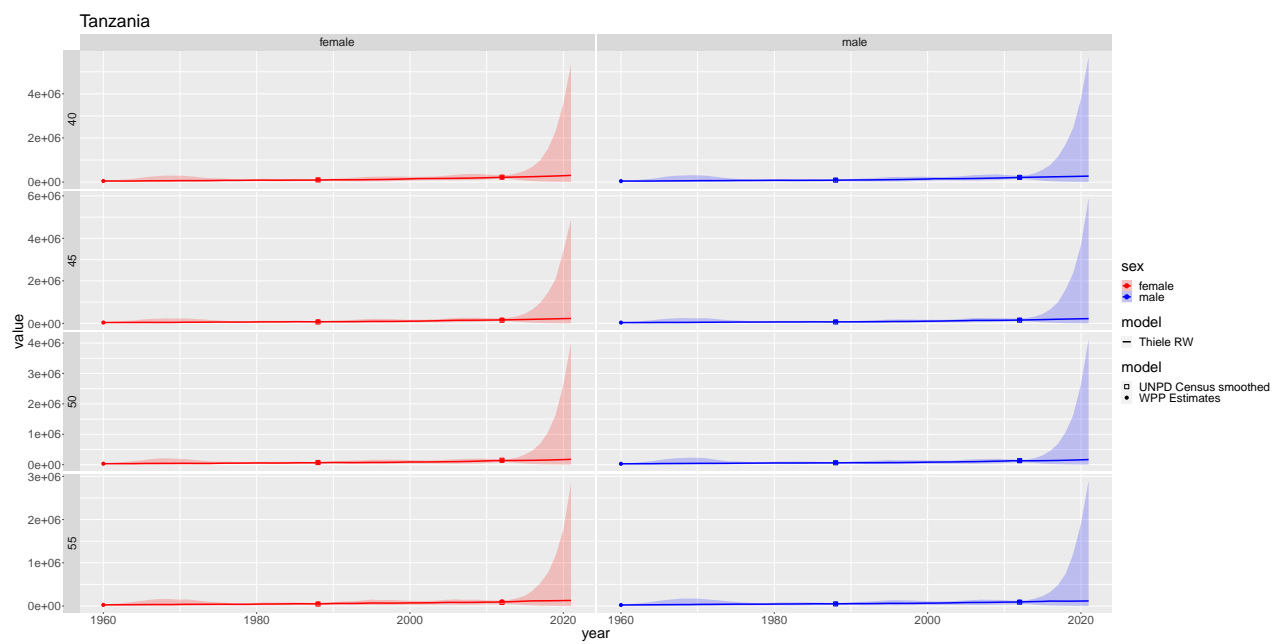

Figure 11: Population
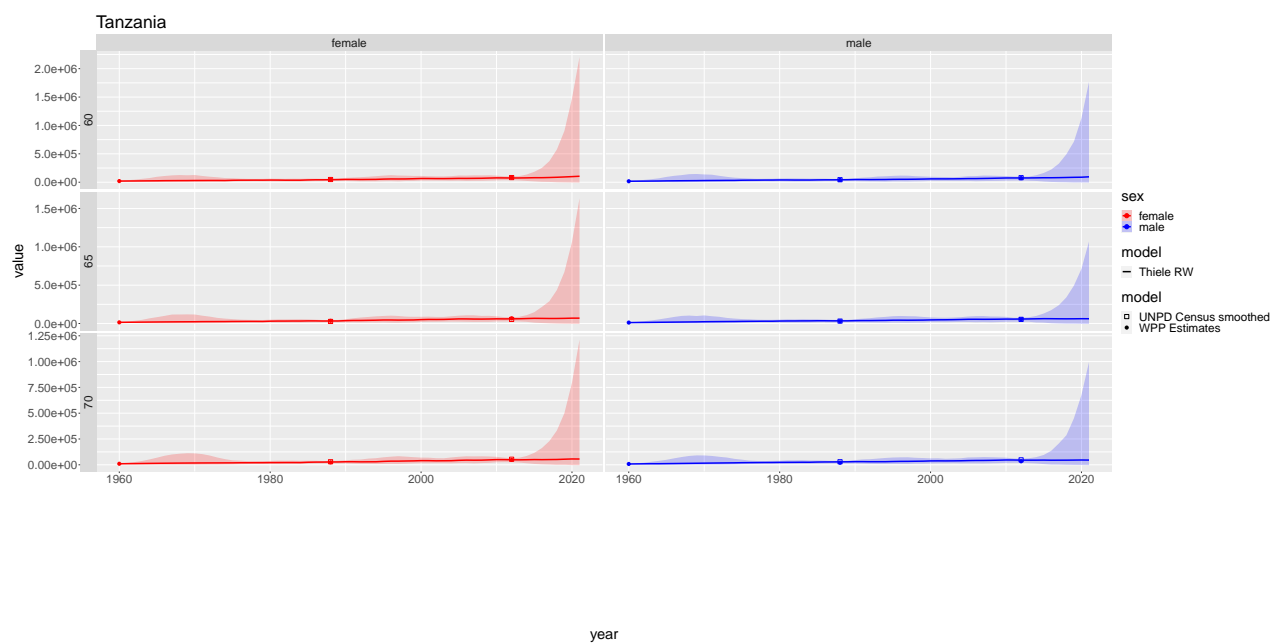
Figure 12: Population
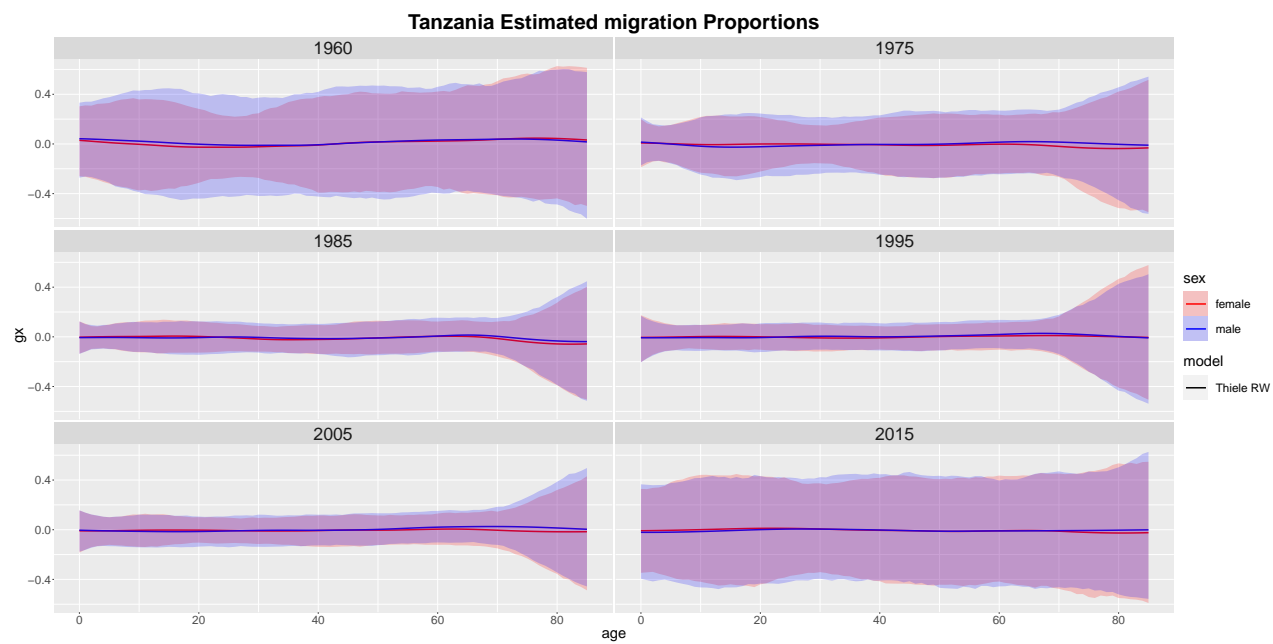

Figure 13: Population
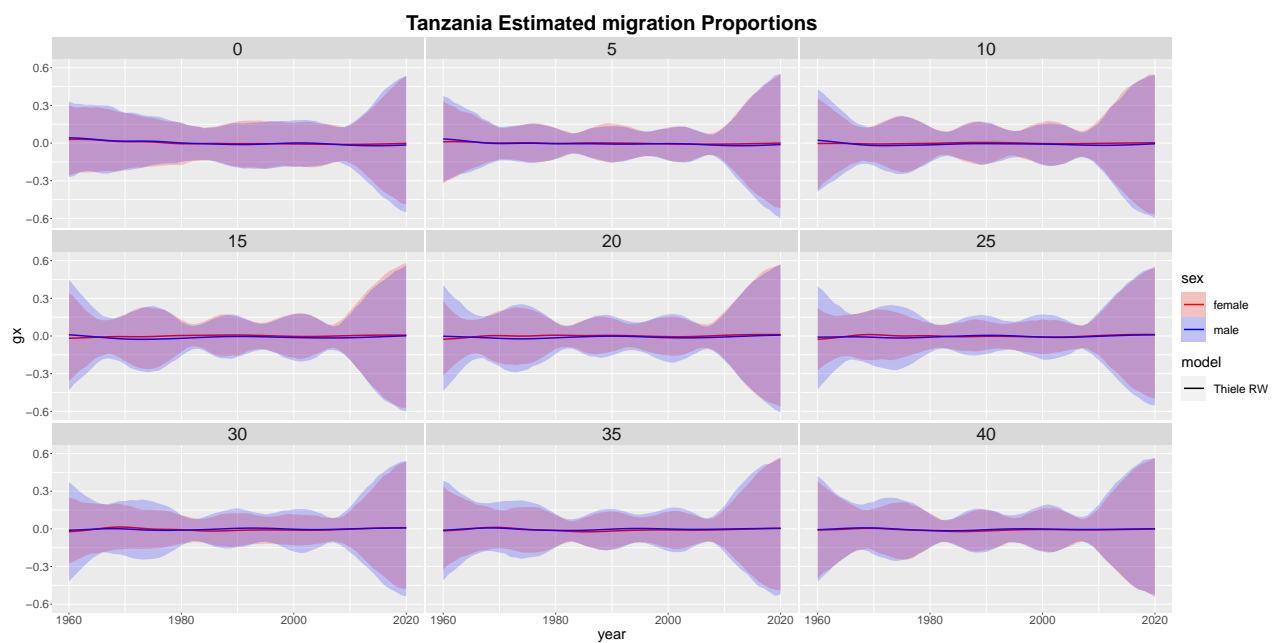
Figure 14: Population
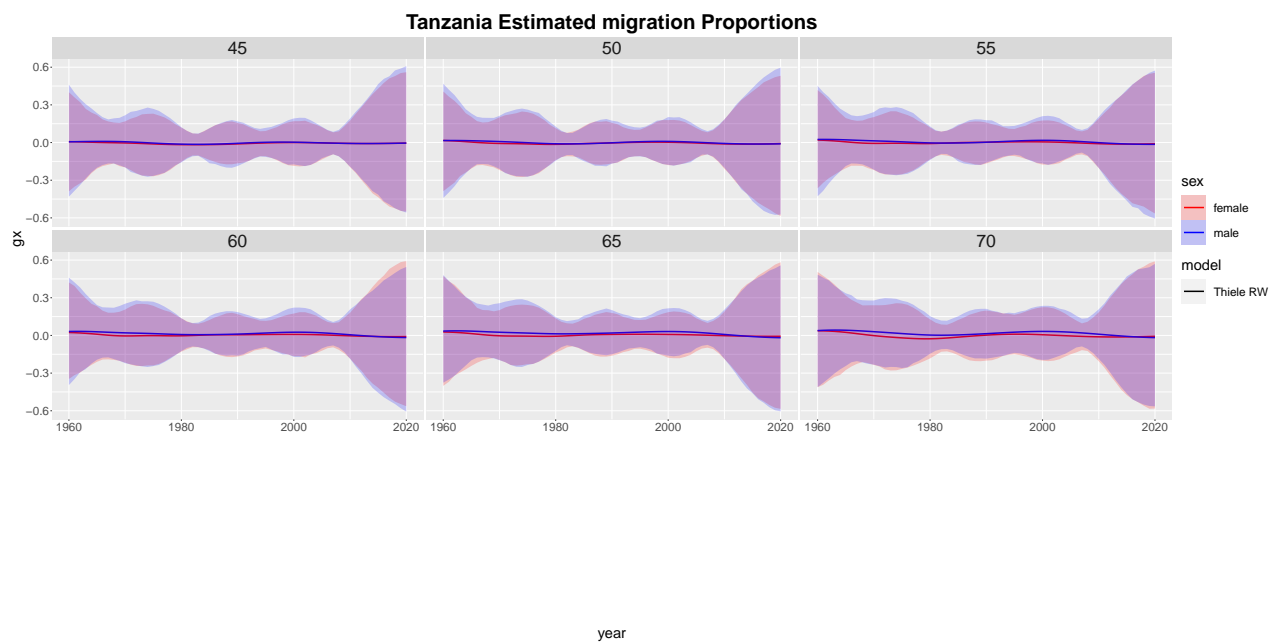

Figure 15: Migration
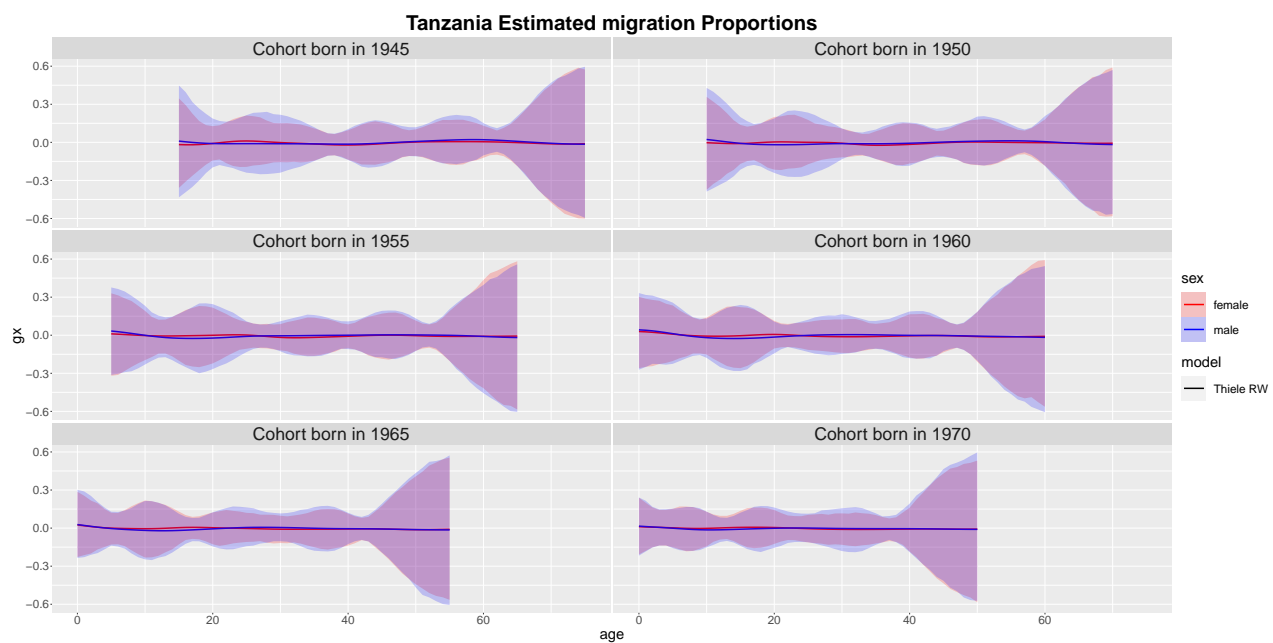
Figure 16: Migration

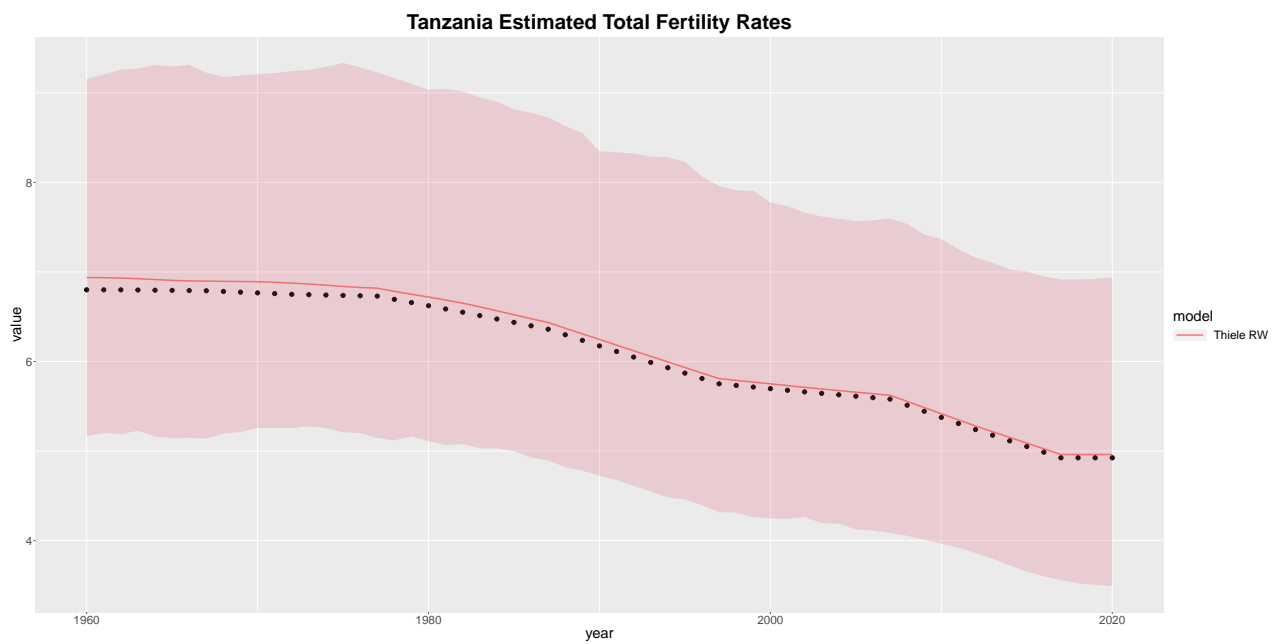Figure 17: Migration
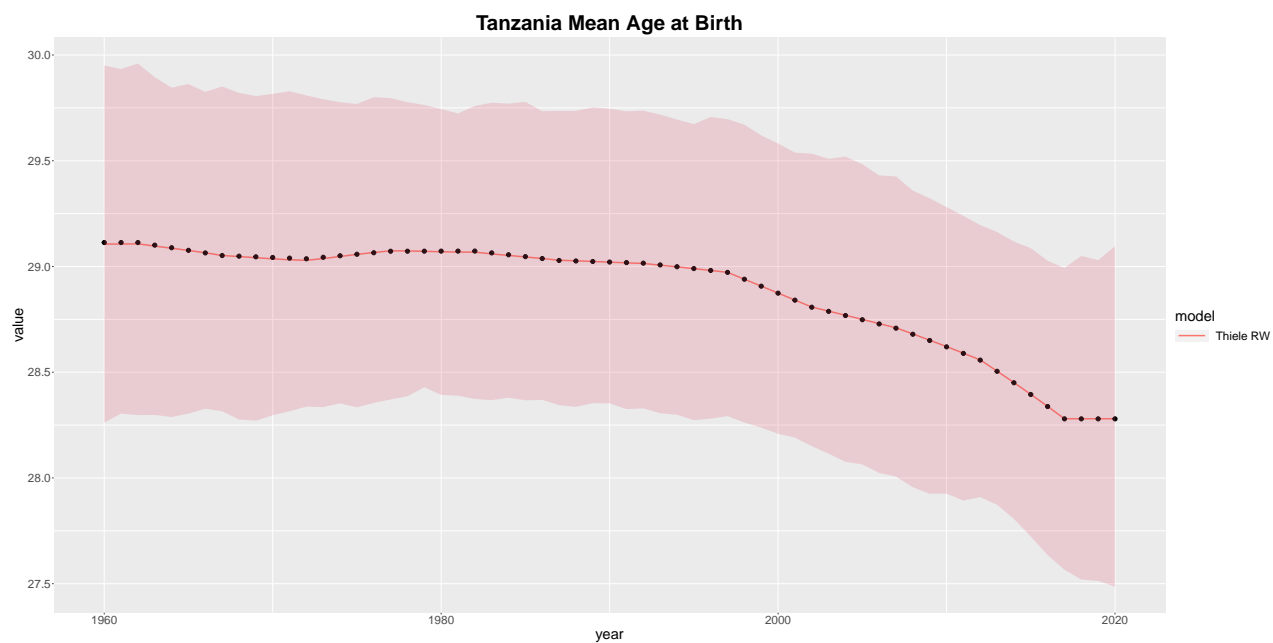
Figure 18: Migration

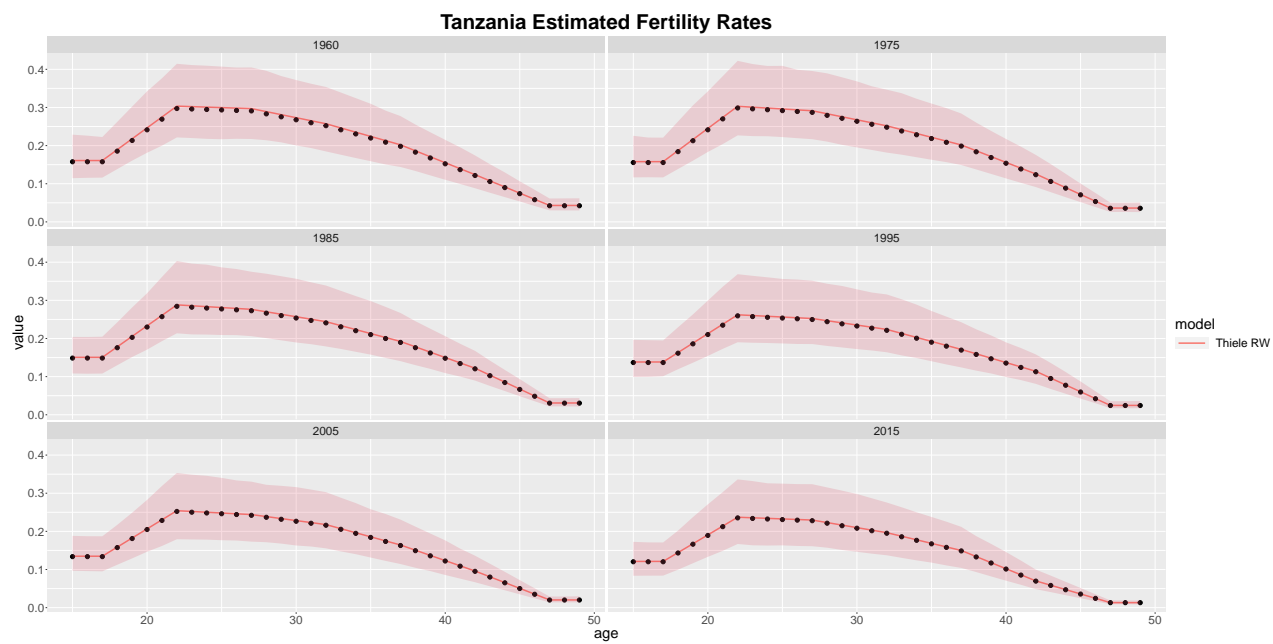Figure 19: Total Fertility

Figure 20: Mean age at births
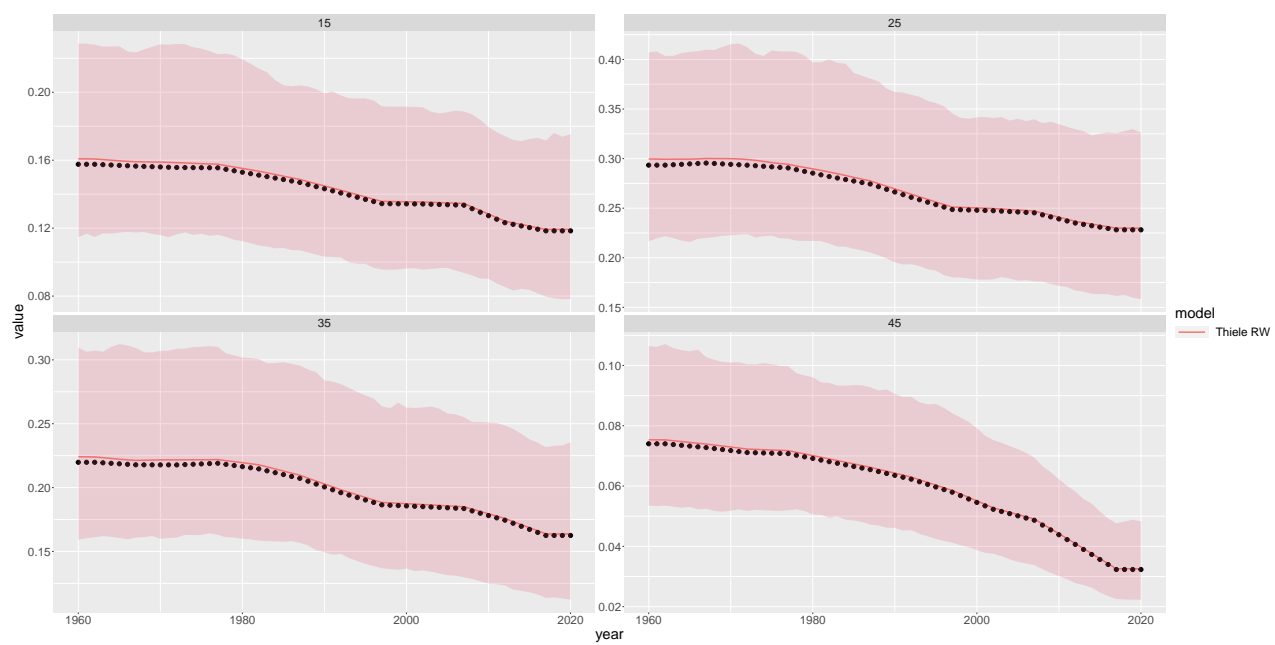

Figure 21: Fertility

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Figure 22: Fertility