Namibia

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

## # A tibble: 86 x 4
##      age `1991` `2001` `2011`
##    <dbl>  <dbl>  <dbl>  <dbl>
## 1      0 24851. 23909.  32157
## 2      1 21976. 23883. 28690.
## 3      2 21726. 24603.  28220
## 4      3 21259. 25041. 27500.
## 5      4 21247. 25458.  27077
## 6      5 20771. 25430. 26048.
## 7      6 20065. 25264. 24803.
## 8      7 19362. 25259. 23924.
## 9      8 18677. 25248. 23376.
## 10     9 18357. 25517. 23940.
## # ... with 76 more rows

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

## # A tibble: 18 x 1
##      age
##    <dbl>
## 1      0
## 2      5
## 3     10
## 4     15
## 5     20
## 6     25
## 7     30
## 8     35
## 9     40
## 10    45
## 11    50
## 12    55
## 13    60
## 14    65
## 15    70
## 16    75
## 17    80
## 18    85

## [1] "Census Males"

## # A tibble: 86 x 4
##      age `1991` `2001` `2011`
##    <dbl>  <dbl>  <dbl>  <dbl>
## 1      0 24861. 23791.  31976
## 2      1 21883. 24016. 28452.
## 3      2 21600. 24629. 28036.
## 4      3 21144. 24966. 27342.
## 5      4 21149. 25281. 26940.
## 6      5 20679. 25177. 25925.
```

```
##  7      6 19965. 24978. 24627.
##  8      7 19163. 24795. 23618.
##  9      8 18386. 24574. 23047
## 10      9 17972. 24684. 23621.
## # ... with 76 more rows
```

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

```
## # A tibble: 18 x 1
##      age
##    <dbl>
##  1     0
##  2     5
##  3    10
##  4    15
##  5    20
##  6    25
##  7    30
##  8    35
##  9    40
## 10    45
## 11    50
## 12    55
## 13    60
## 14    65
## 15    70
## 16    75
## 17    80
## 18    85
```

Thiele log-Normal Hump Spline

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

```
##     log_tau2_logpop    log_tau2_logpop    log_tau2_logpop    log_tau2_logpop
##         4.021504726        6.307082422        3.944192586        6.256805989
##       log_lambda_fx      log_lambda_gx      log_dispersion      log_dispersion
##        10.734066379       12.086150428        0.969591281        0.812128005
##       log_lambda_tp           tp_slope         tp_params_5         tp_params_10
##         3.895677026       -0.008132031        0.082421076        0.385007734
##      log_lambda_phi      log_lambda_psi        log_lambda_A        log_lambda_B
##        13.741675430       12.773457855       13.683105284       12.573819432
##  log_lambda_lambda   log_lambda_delta log_lambda_epsilon
##         2.064284283        5.188864206        3.310281007
```
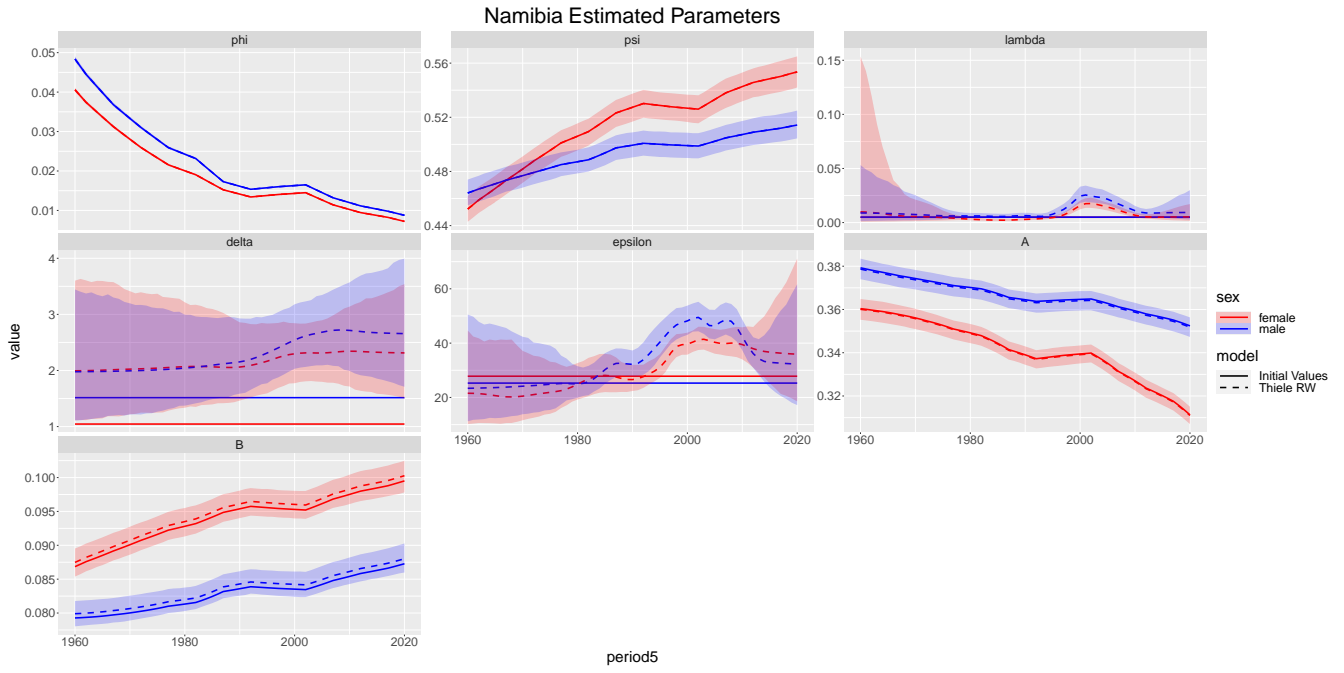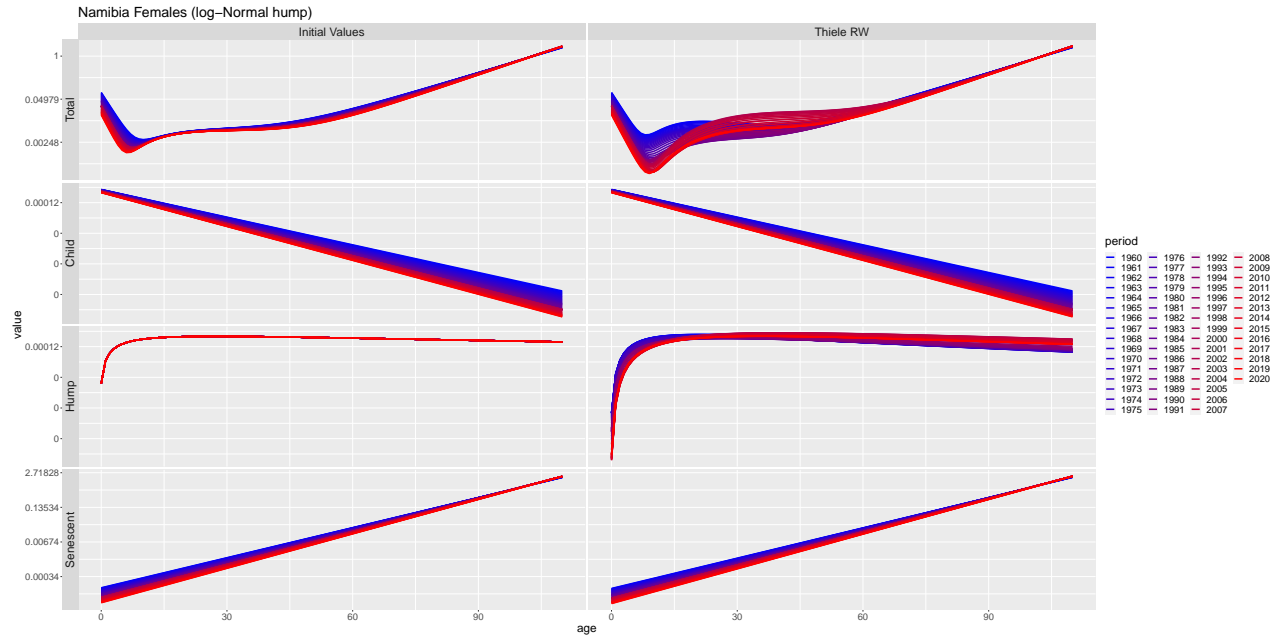
Figure 1: Estimated parameters

Figure 2: Thiele Decomposed

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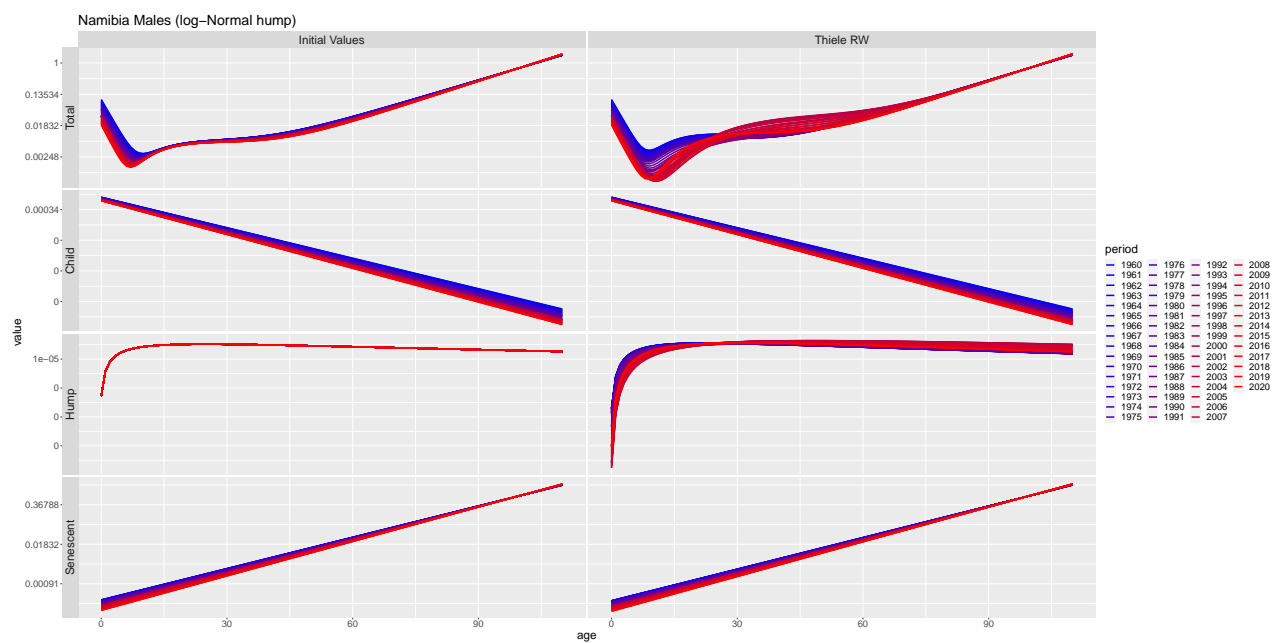Figure 3: Thiele Decomposed

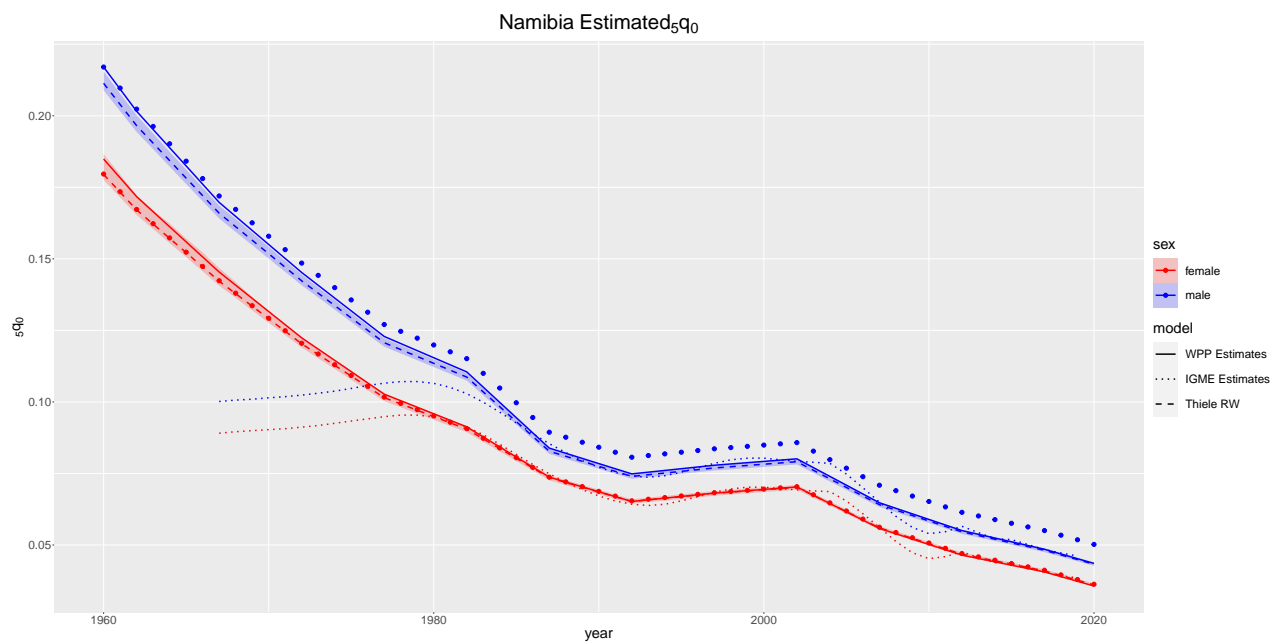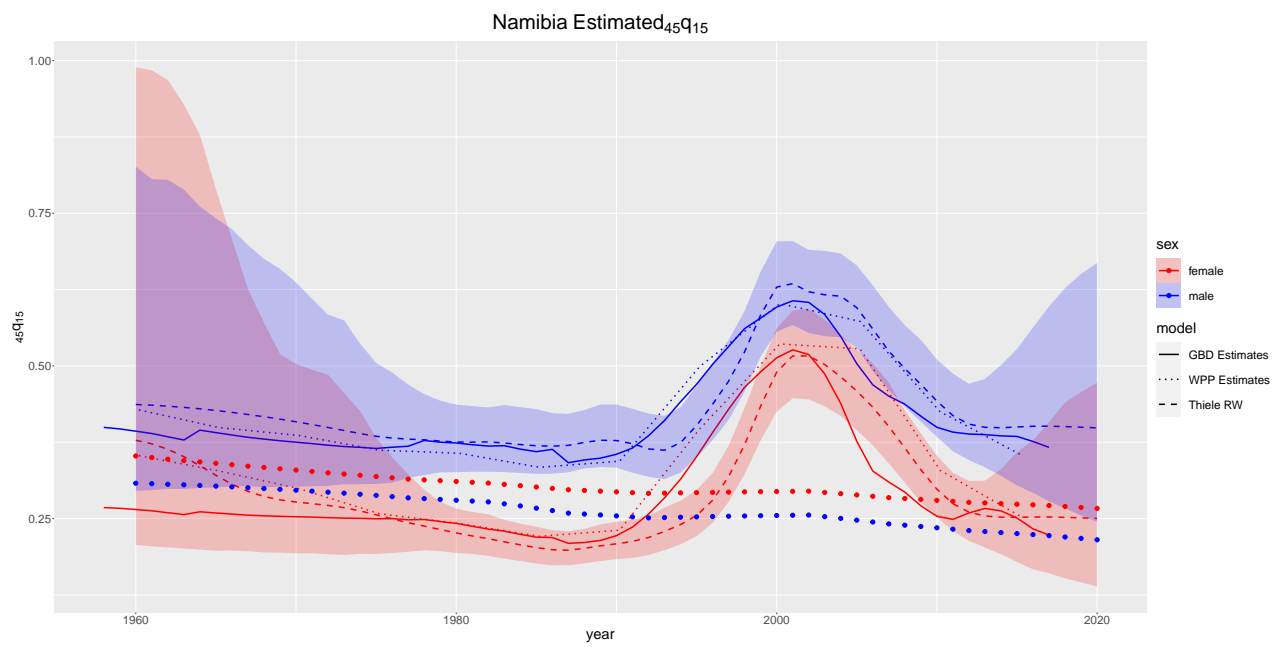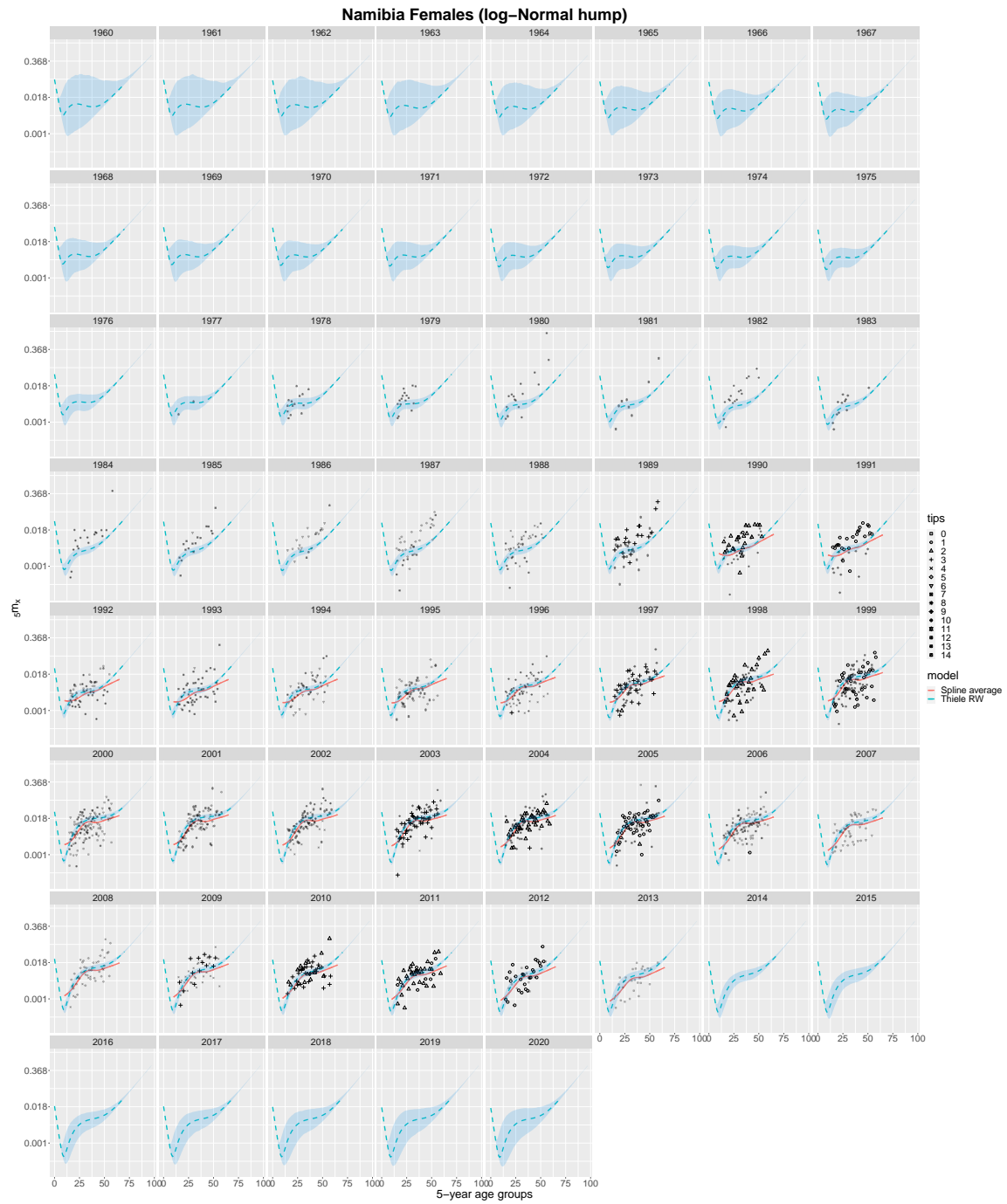Figure 4: Estimated $_5q_0$

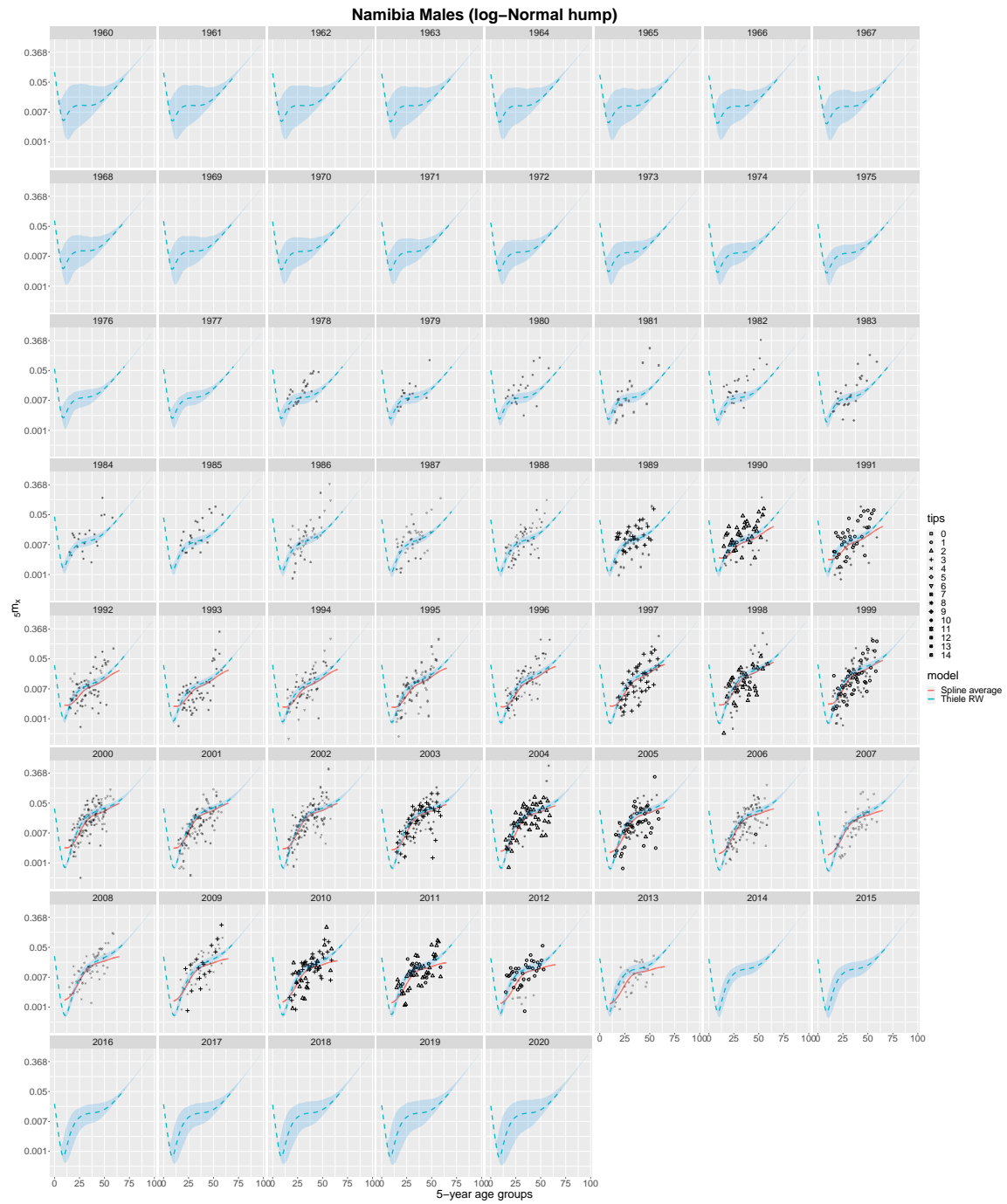Figure 5: Estimated $_{45}q_{15}$

Figure 6: Mortality Schedules
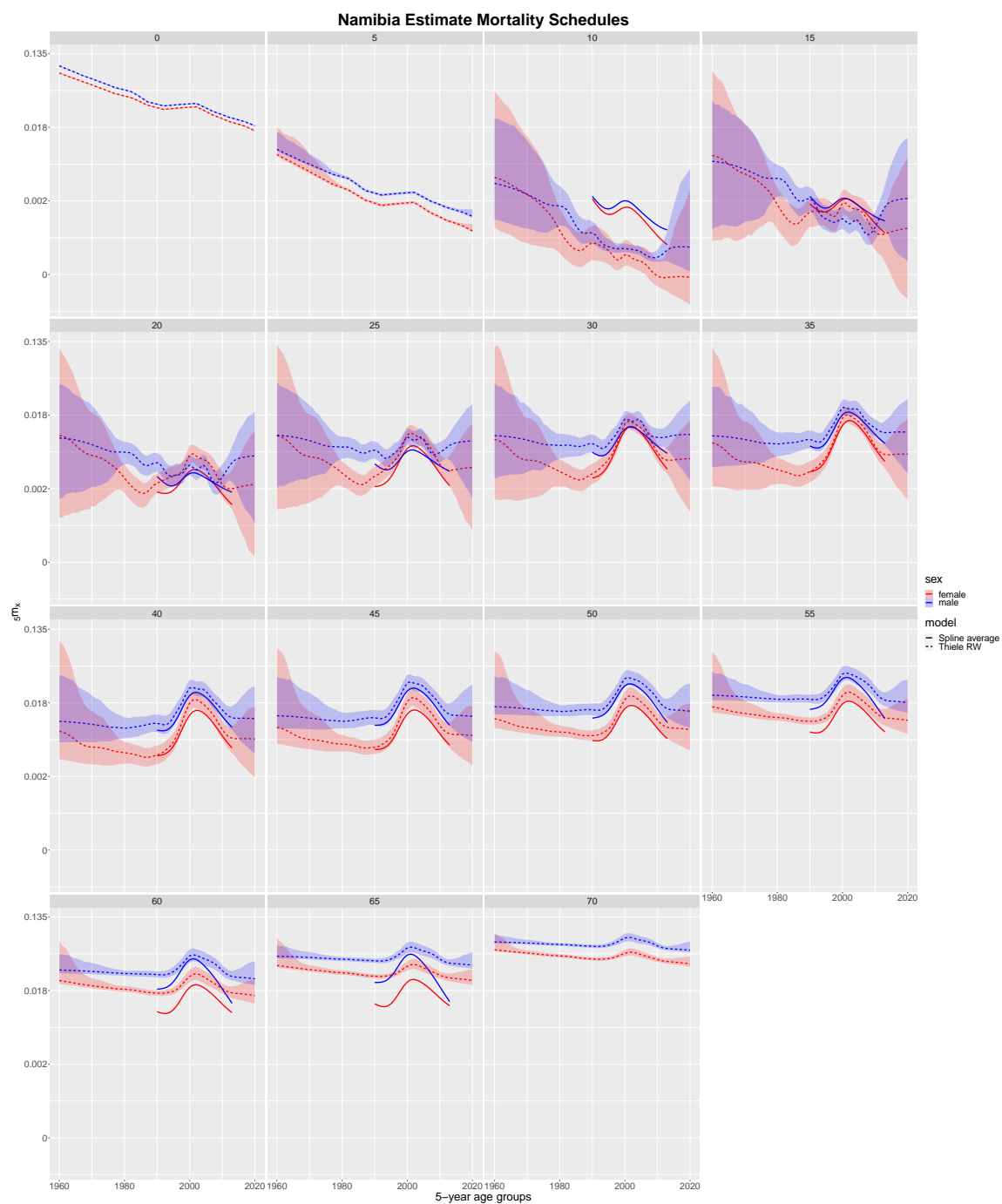
Figure 7: Mortality Schedules
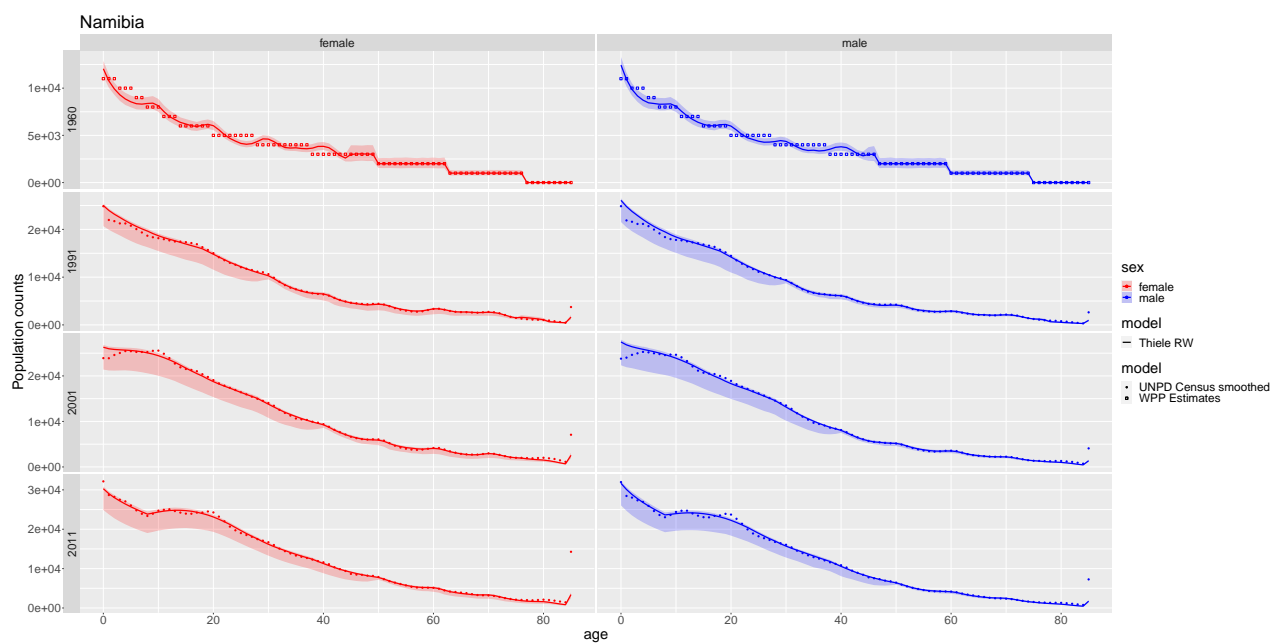
Figure 8: Mortality Schedules
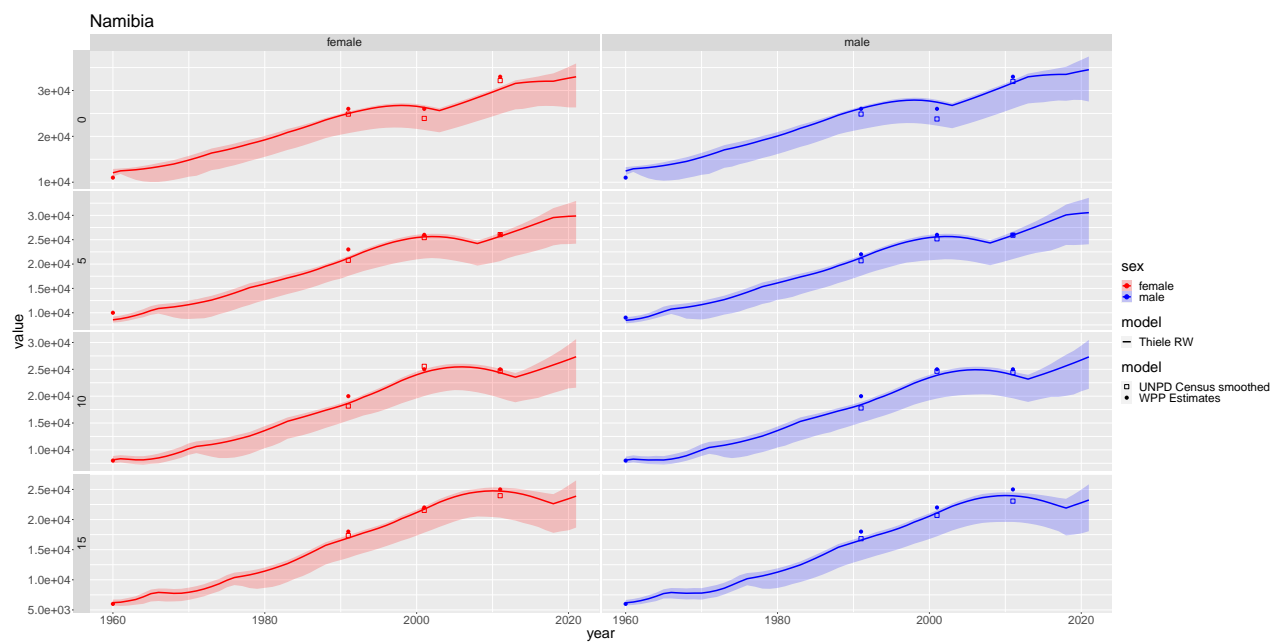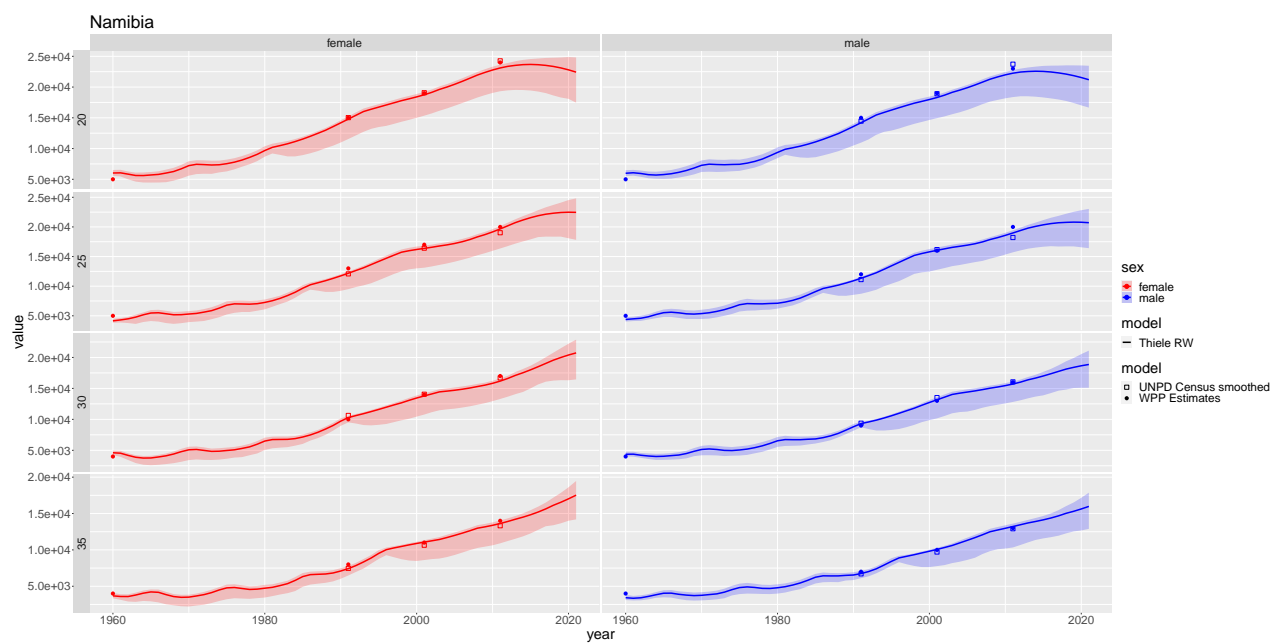
Figure 9: Population

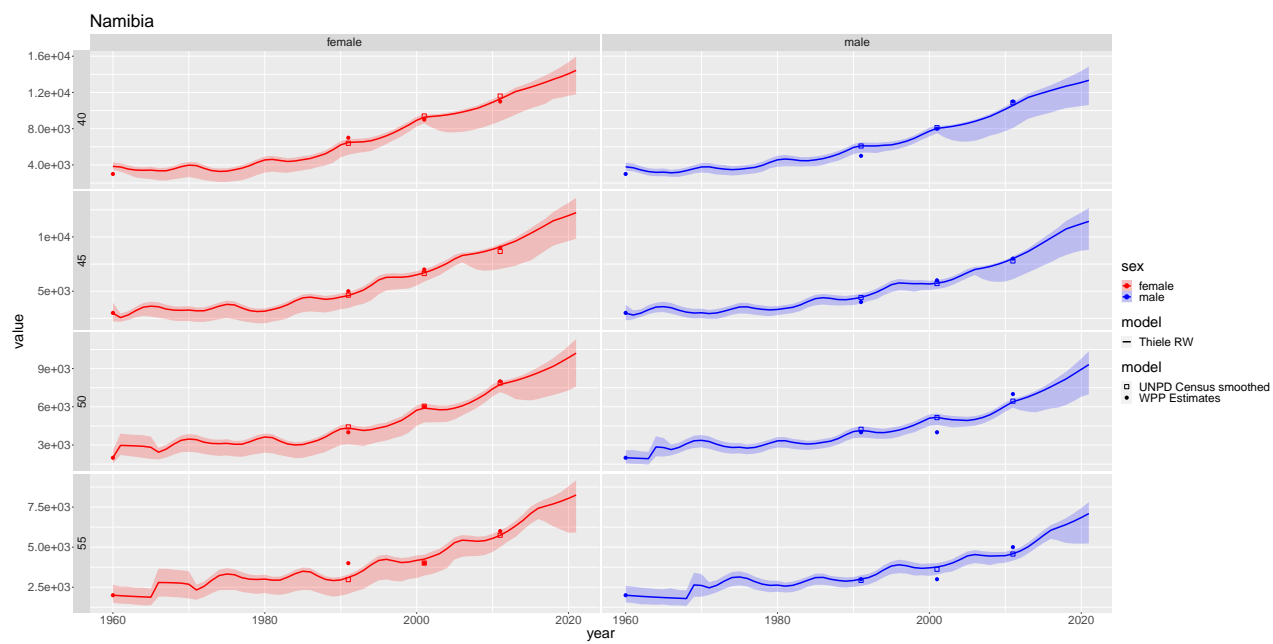
Figure 10: Population

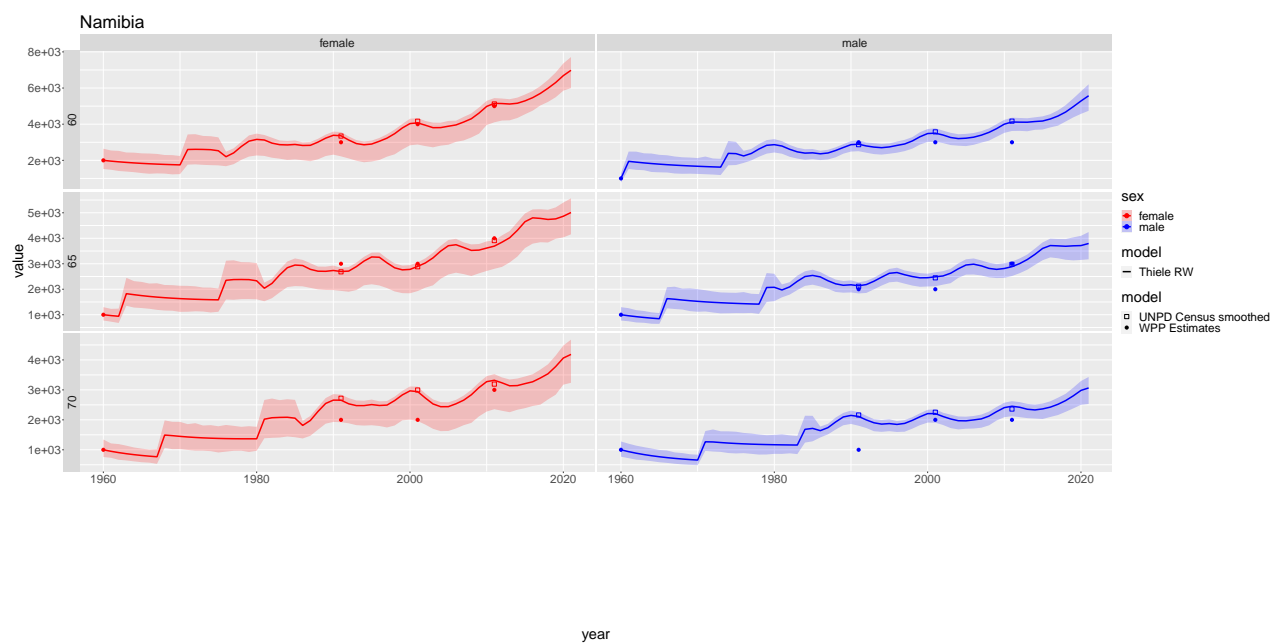Figure 11: Population
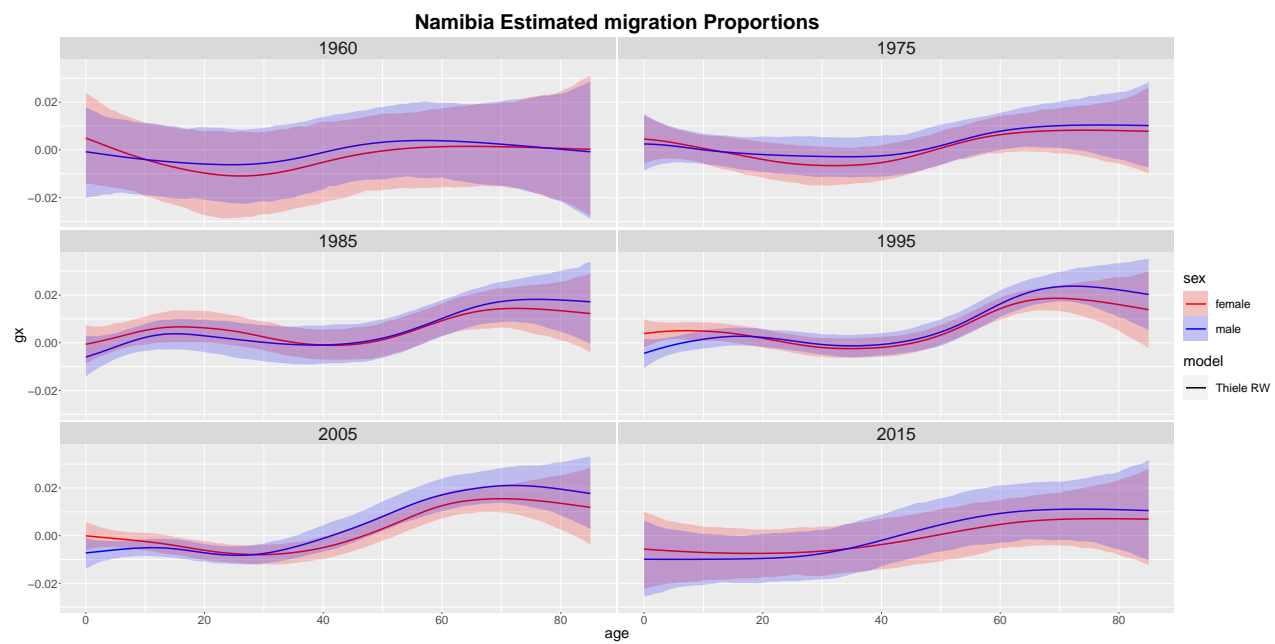

Figure 12: Population

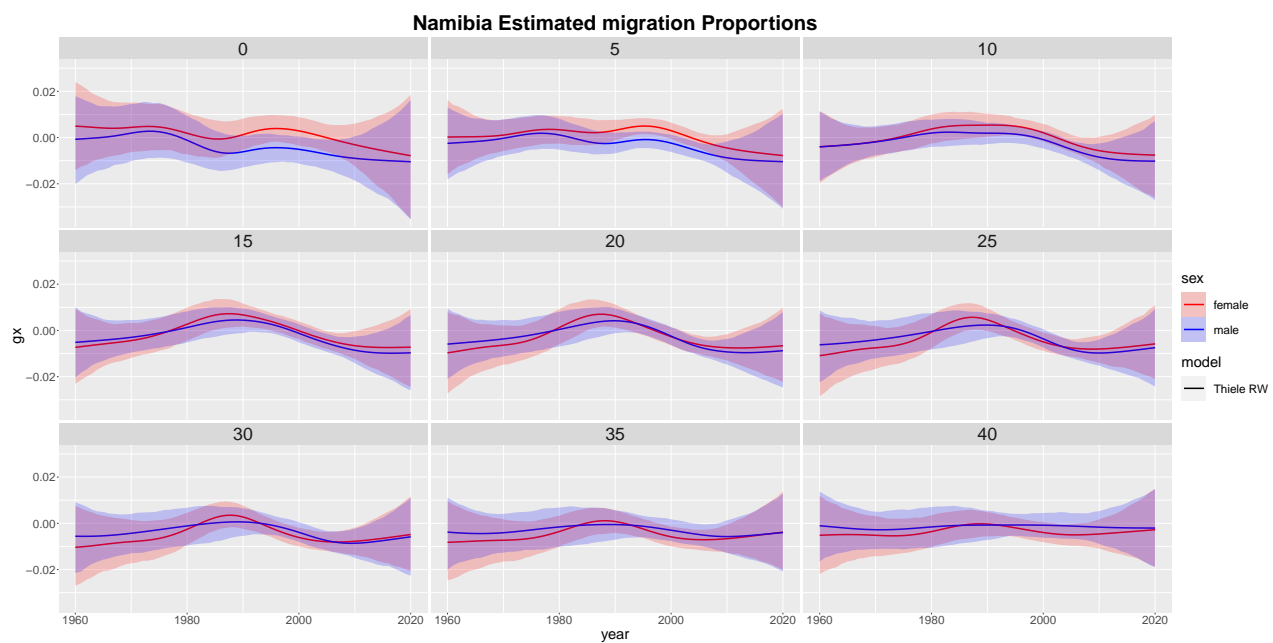Figure 13: Population
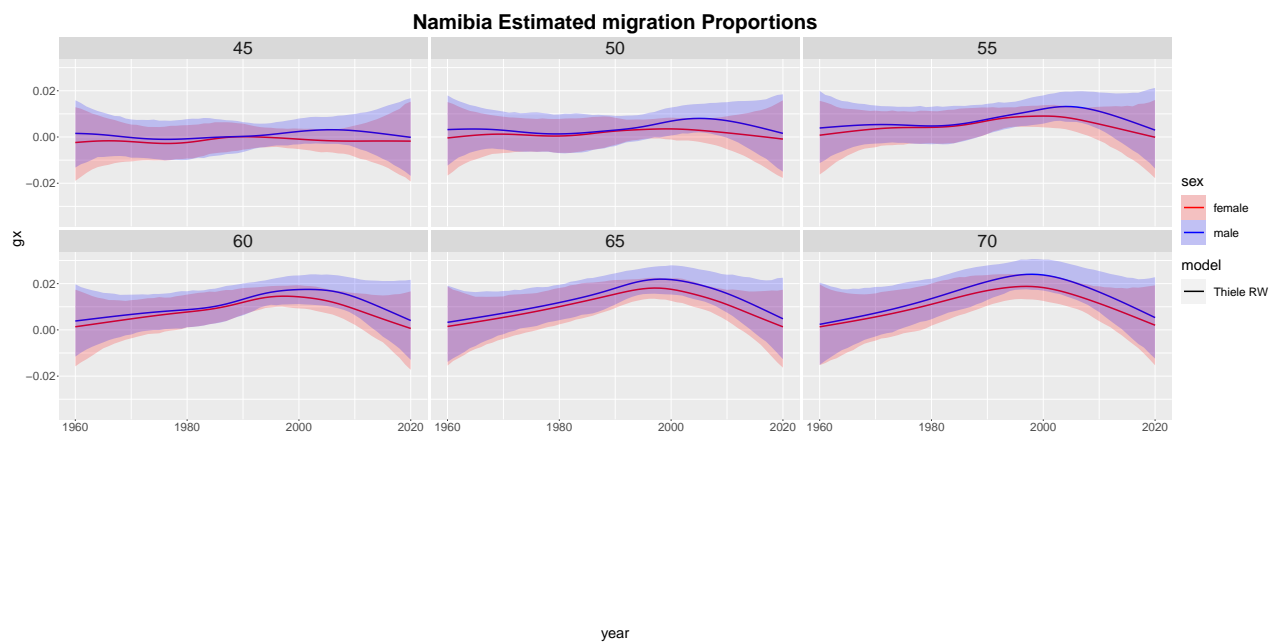

Figure 14: Migration

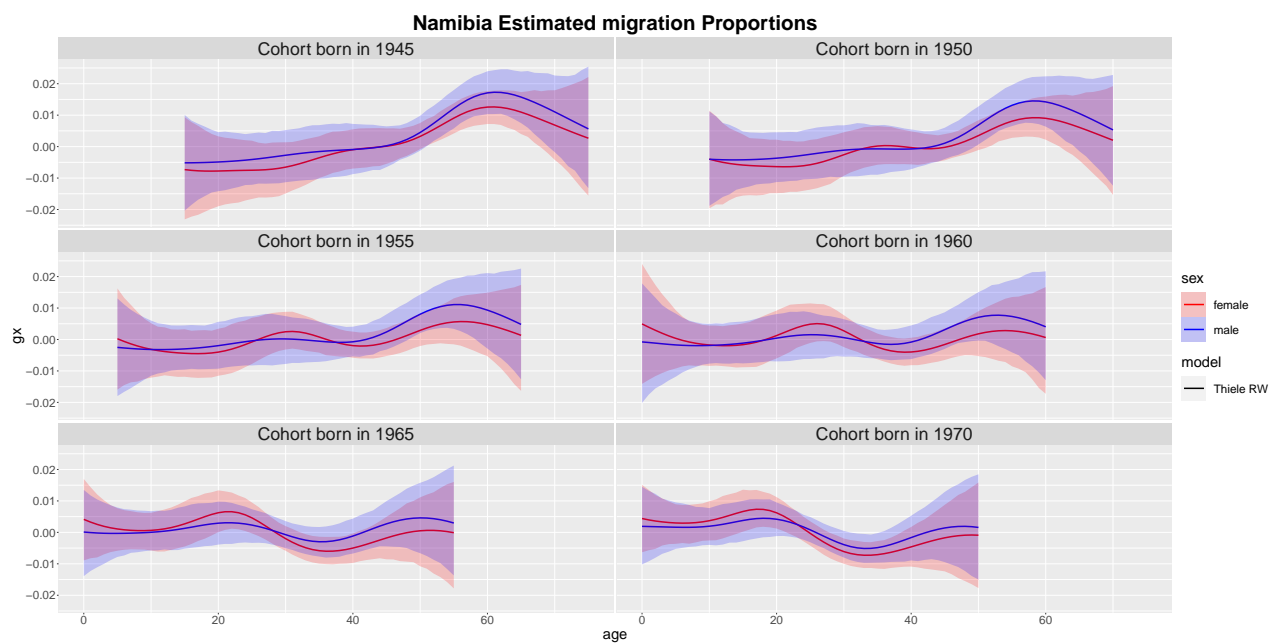Figure 15: Migration
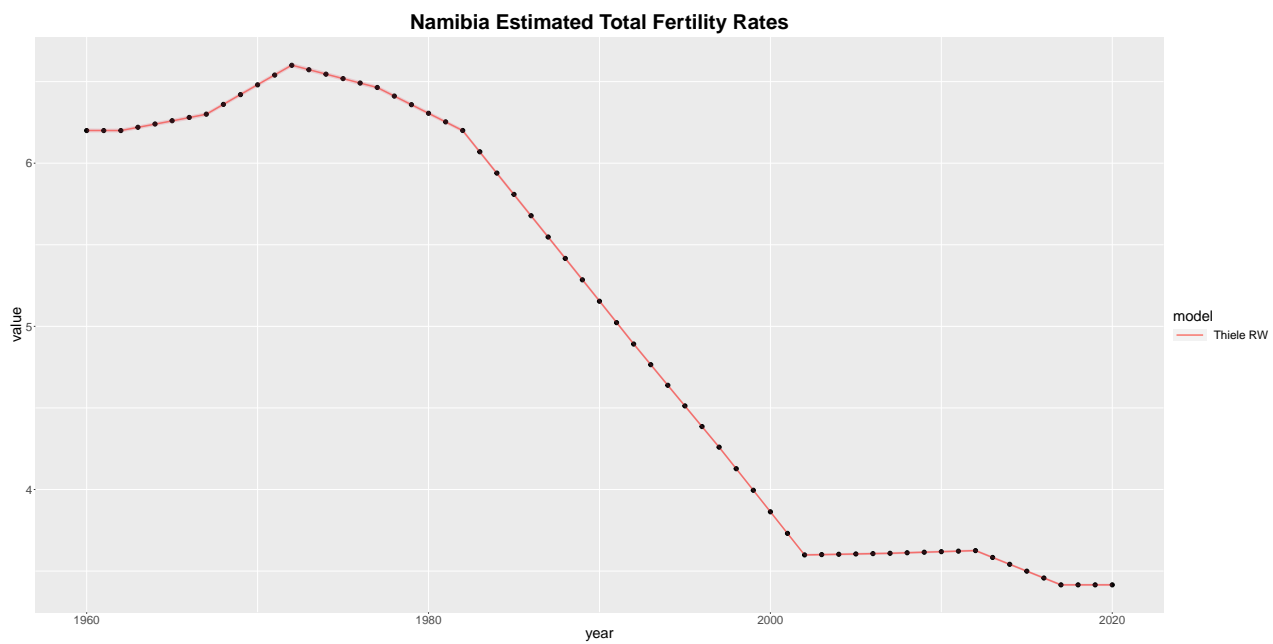

Figure 16: Migration

Figure 17: Migration
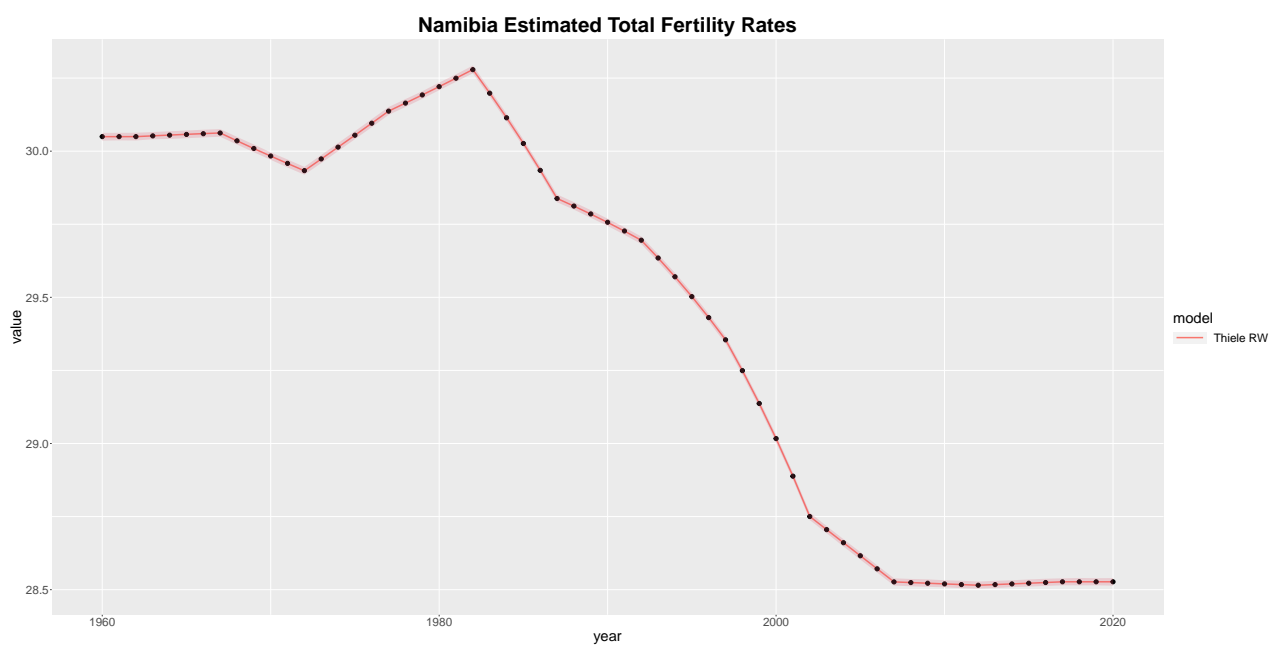
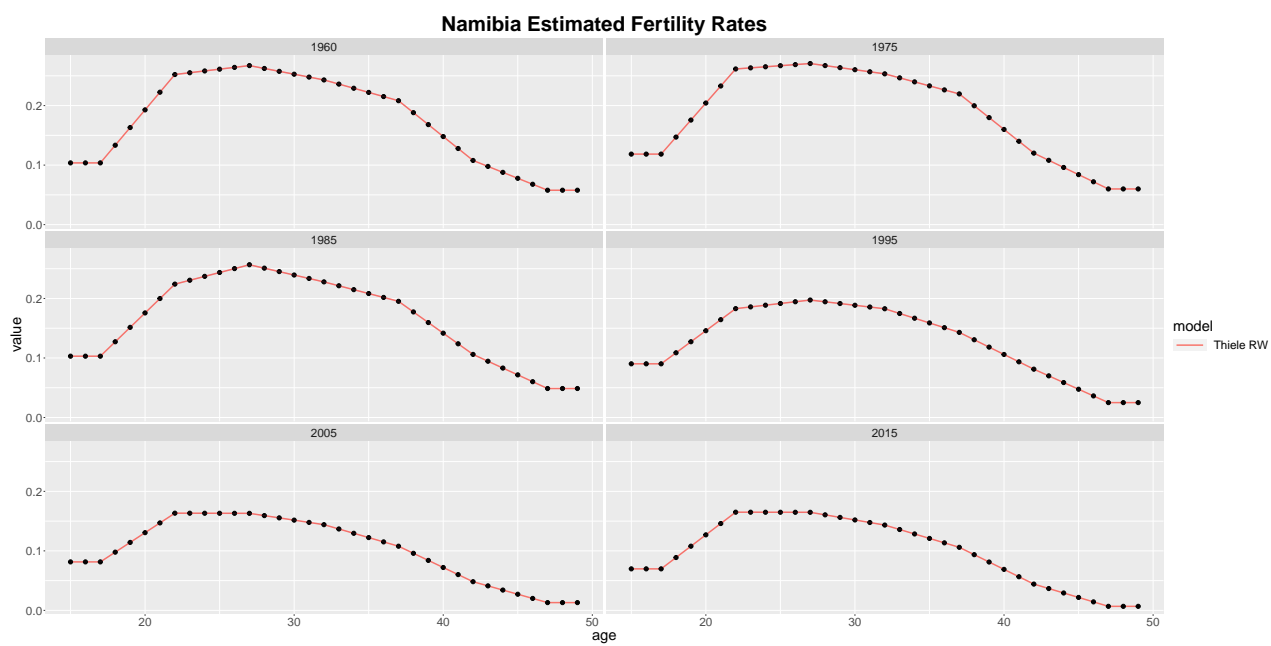

Figure 18: Total Fertility

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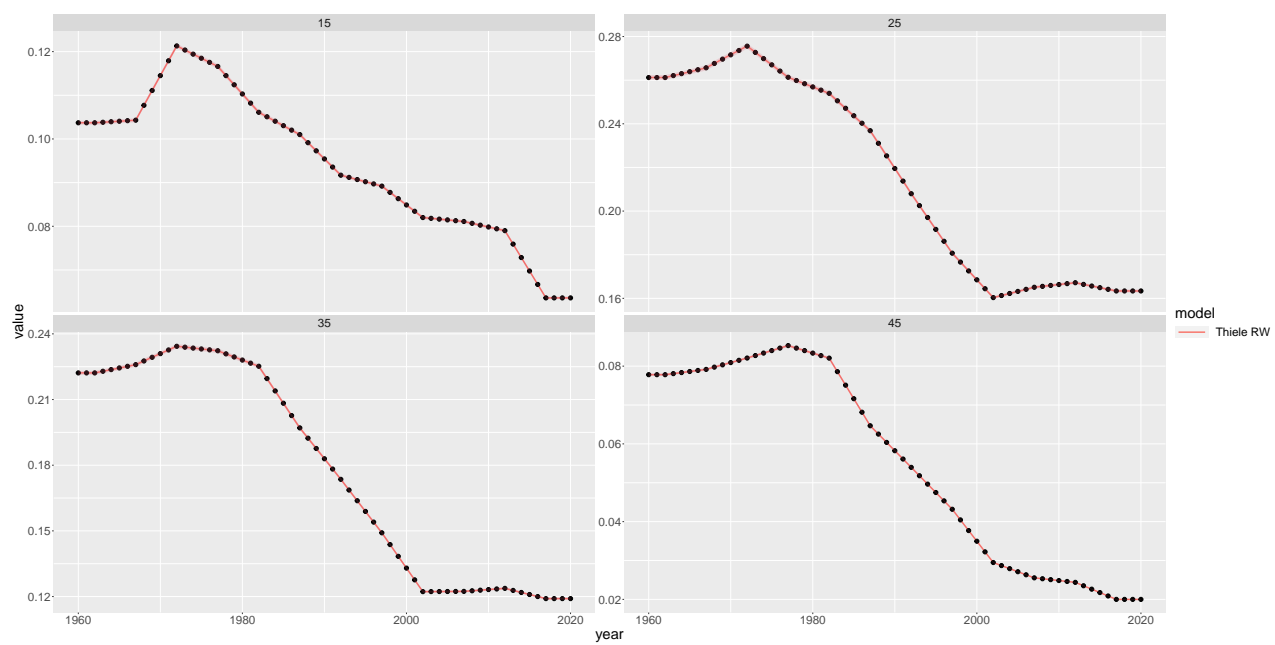Figure 19: Mean age at births

Figure 20: Fertility

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Figure 21: Fertility