Togo

```
## [1] "Census Females"
   # A tibble: 18 x 4
##
##
                          `1981`
                 1970
                                   `2010`
      aggr.age
##
         <dbl>
                  <dbl>
                           <dbl>
                                    <dbl>
##
   1
              0 205745. 270991. 445753.
##
              5 162212. 223881. 436083.
             10 104920. 164223. 370046.
   3
##
##
    4
                 75497. 130977. 309693.
             15
##
   5
                 79994. 122493. 290666.
             20
##
    6
                 83454. 111348. 270917.
##
   7
             30
                 72531.
                          90044. 229765.
##
    8
                          68593. 187312.
             35
                 57568.
##
   9
             40
                 43942.
                          53165. 151703.
                          41694. 120178.
## 10
             45
                 33669.
##
  11
             50
                 25240.
                          30908.
                                   92157.
##
   12
             55
                 18557.
                          22256.
                                   69045.
##
  13
             60
                 15285.
                          18221.
                                   54414.
## 14
             65
                 12514.
                          14719.
                                   43884.
                          10947.
## 15
             70
                  9034.
                                   33878.
                                  20370.
## 16
             75
                  5962.
                           6866.
## 17
             80
                  4091.
                          18818.
                                   45734.
## 18
             85
                  8760.
                             NA
                                      NA
## [1] "Census Males"
   # A tibble: 18 x 4
##
                 1970
                          `1981`
                                   `2010`
      aggr.age
##
          <dbl>
                  <dbl>
                           <dbl>
                                    <dbl>
##
   1
              0 203979. 273552. 457477.
   2
              5 172896. 240827. 453946.
##
             10 117907. 184640. 395001.
##
    3
                 74089. 132551. 318112.
##
    4
             15
##
    5
                 56943.
                          96868. 258958.
             20
##
    6
             25
                 51808.
                          76324. 220972.
##
    7
             30
                 48665.
                          62959. 195558.
                          51668. 168457.
##
    8
             35
                 44229.
##
   9
                          44478. 139836.
             40
                 37863.
## 10
             45
                 31765.
                          38728. 112004.
## 11
             50
                 25110.
                          30174.
                                   83440.
## 12
                          22170.
             55
                 18801.
                                  59442.
##
  13
             60
                 14915.
                          18389.
                                   42713.
                          15110.
                                   30553.
##
  14
             65
                 11797.
## 15
             70
                  8474.
                          11486.
                                   22097.
## 16
             75
                  5712.
                           7179.
                                   13278.
## 17
             80
                  4154.
                          20772.
                                   28018.
## 18
                 10688.
                             NA
                                      NA
             85
```

Thiele log-Normal Hump RW

Warning in fit_tmb(input.thiele.loghump.oag.vec.RW, inner_verbose = FALSE, : convergence error: false c

```
## user system elapsed
## 4.28 0.16 4.44
## [1] "false convergence (8)"
```

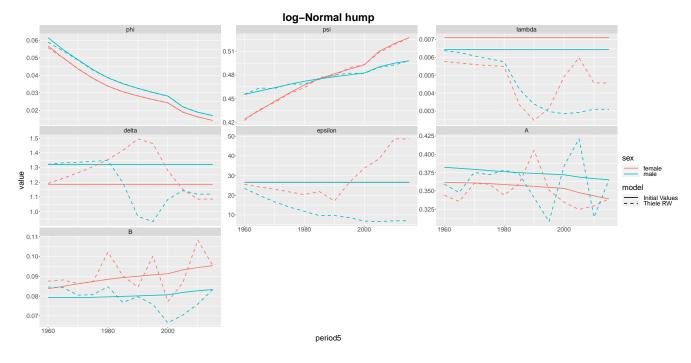


Figure 1: Estimated parameters

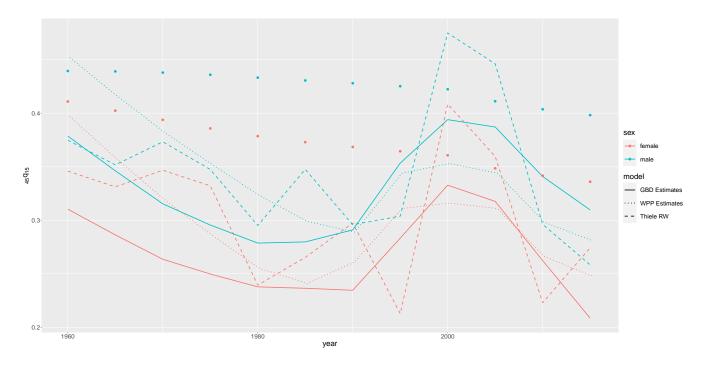


Figure 2: Estimated $_{45}q_{15}$

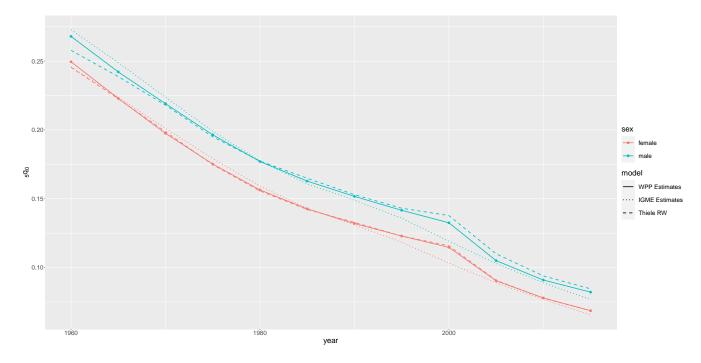


Figure 3: Estimated $_5q_0$

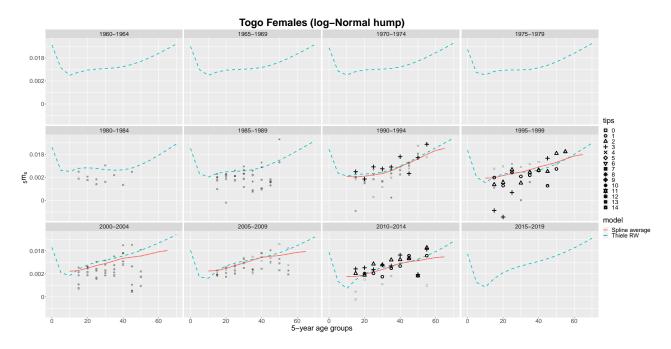


Figure 4: Mortality Schedules

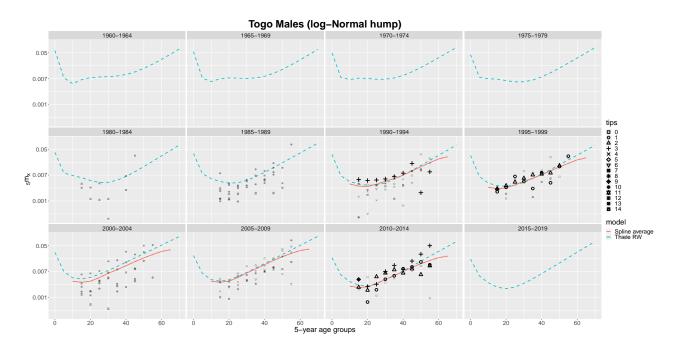


Figure 5: Mortality Schedules

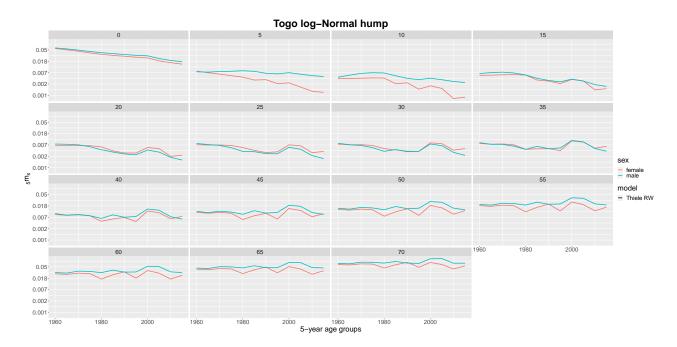


Figure 6: Mortality Schedules

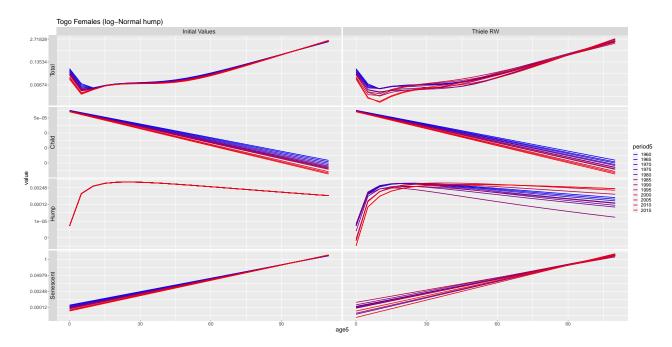


Figure 7: Thiele Decomposed

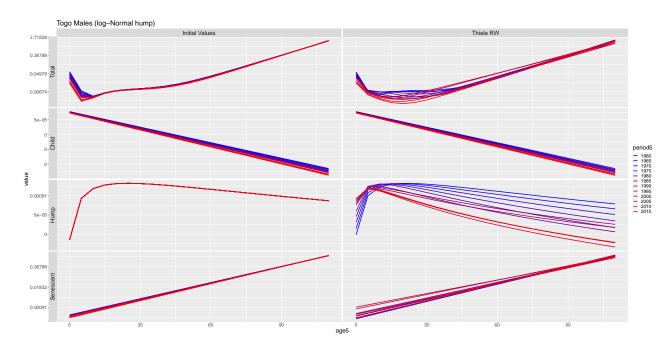


Figure 8: Thiele Decomposed

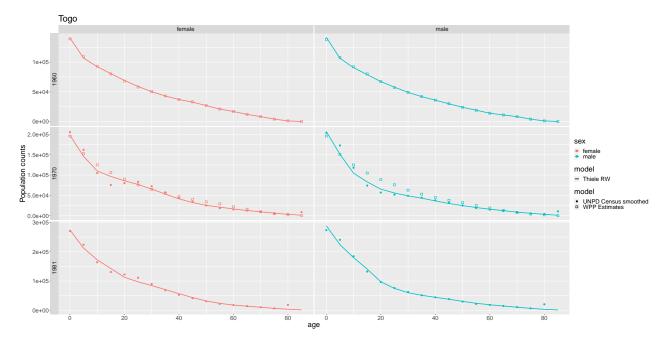


Figure 9: Population

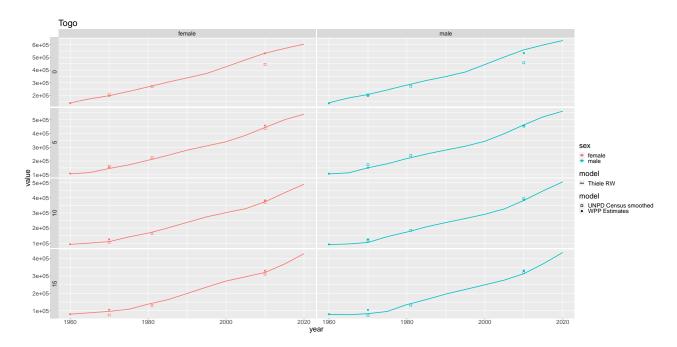


Figure 10: Population

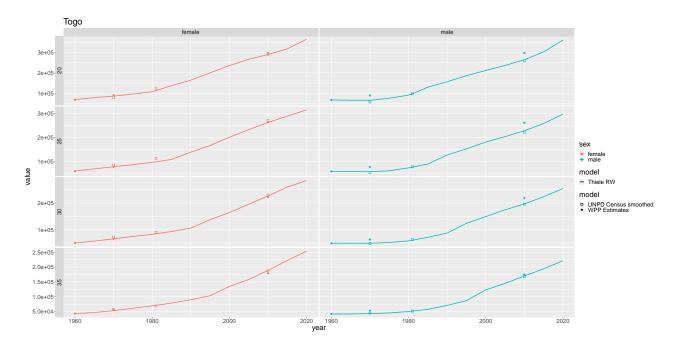


Figure 11: Population

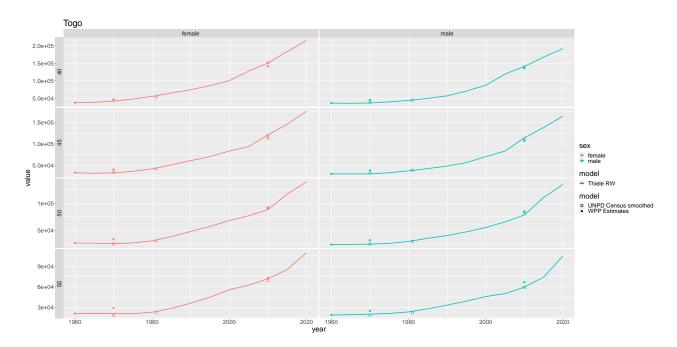


Figure 12: Population

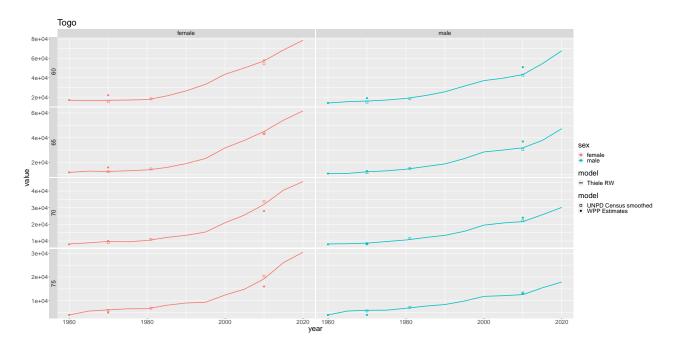


Figure 13: Population

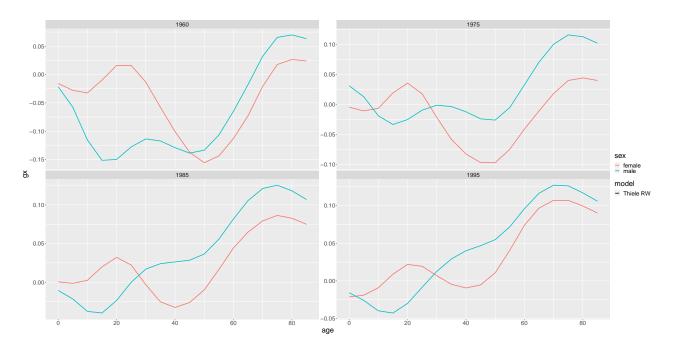


Figure 14: Migration

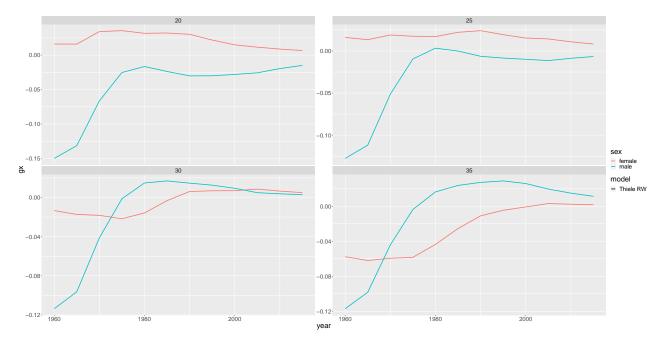


Figure 15: Migration

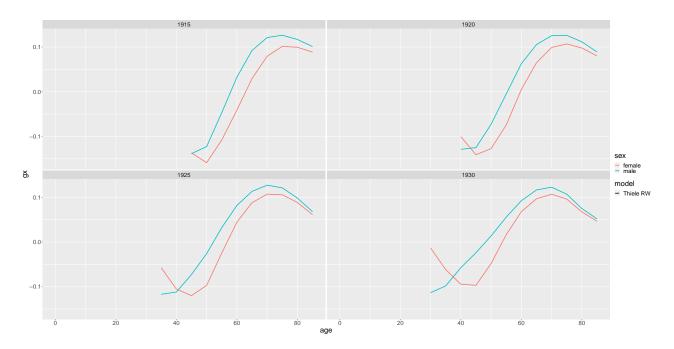


Figure 16: Migration

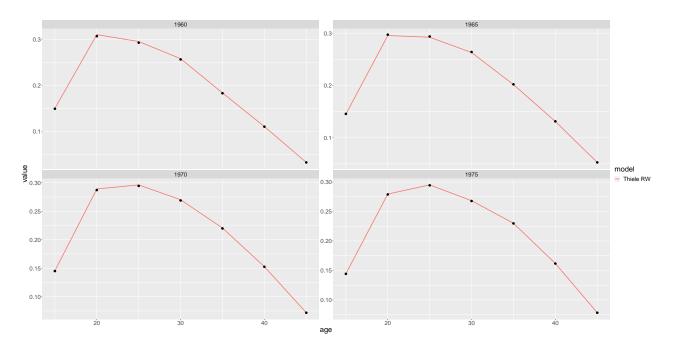


Figure 17: Fertility

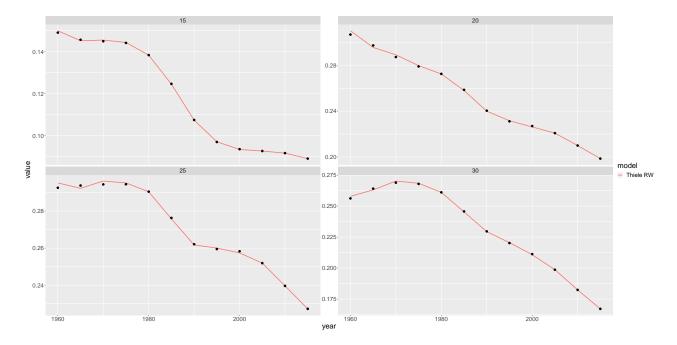


Figure 18: Fertility