Malawi

```
## [1] "Census Females"
##
  # A tibble: 18 x 7
##
                         1977
                                  1987
                                                    2008
                                                              2018
                 1966
                                          1998
      aggr.age
##
         <dbl>
                  <dbl>
                          <dbl>
                                   <dbl>
                                           <dbl>
                                                     <dbl>
                                                               <dbl>
##
   1
             0 382092 552376. 705831. 836765
                                                1200064 1286435
##
             5 301988
                        416036. 628805. 725975
                                                  1009091. 1310090.
            10 250885. 313031. 507772. 629430.
##
   3
                                                   833912. 1234316.
    4
            15 209466
                        273147. 414540. 570030.
                                                   707975. 1055605
##
##
   5
            20 183540. 255764. 363053. 511617.
                                                   648740.
                                                            856427
##
    6
            25 164044. 220751. 304369. 409797.
                                                   560306
                                                            689452.
##
   7
            30 142858 175355. 247344. 310164.
                                                   423114
                                                            582199.
            35 121689. 140220. 206141. 242568.
##
    8
                                                   308002.
                                                            488692.
##
   9
            40 102922 119257. 165333. 193342.
                                                   230240.
                                                            371947.
##
  10
            45
                83121. 104342. 132676. 158048.
                                                   179338.
                                                            271520.
##
  11
            50
                66045
                         85701. 109865. 122280.
                                                   149304.
                                                            205954.
##
  12
            55
                49106
                         67465.
                                 91077.
                                          92530
                                                   127931.
                                                            163065
##
  13
            60
                33155
                         54358.
                                 78096.
                                          80162
                                                   103183.
                                                            137428.
##
  14
            65
                79545
                         40983.
                                 63269.
                                          70226.
                                                    80198
                                                            118340.
## 15
            70
                    NA
                         28902.
                                 43679.
                                          53119.
                                                    65409.
                                                             91932.
## 16
            75
                    NA
                         20259.
                                 27237.
                                          36136
                                                    53774
                                                             66692
## 17
            80
                    NA
                         13773.
                                 17827.
                                          24320.
                                                    38230
                                                             46553.
                         24390.
                                 23505.
## 18
            85
                    NA
                                          25681
                                                    47351.
                                                             47742
## [1] "Census Males"
   # A tibble: 18 x 7
##
                 1966
                         `1977`
                                  1987
                                          1998
                                                    2008
                                                              `2018`
      aggr.age
##
         <dbl>
                          <dbl>
                                   <dbl>
                                           <dbl>
                                                     <dbl>
                                                               <dbl>
                  <dbl>
##
   1
             0 366133
                        529521. 688936. 823625
                                                 1169947
                                                          1265971
                        410674. 619764. 717432.
##
   2
             5 295618
                                                   985159. 1277777.
            10 238983. 314866. 501357. 618896.
##
    3
                                                   812531. 1199542.
##
    4
            15 189232
                        253035. 383120. 526828.
                                                   658051. 1008587.
##
    5
            20 153666. 213954. 313076. 448014.
                                                   566341.
                                                            785700
##
    6
            25 128427. 187227. 268166. 381511
                                                   508151
                                                            614954.
##
   7
               109493. 156681. 225210. 309779
                                                   422236
                                                            521016
                95656. 125964. 189002. 240333.
##
    8
            35
                                                   320858.
                                                            455013
##
   9
                84395 106763. 154703. 191409.
            40
                                                   232005
                                                            369070.
## 10
            45
                71344.
                         92944. 124405. 158219
                                                   169974.
                                                            275767.
                         75529. 100319. 124138.
## 11
            50
                59436.
                                                   135864.
                                                            198649.
## 12
                                         93066.
                47722
            55
                         61111. 81417.
                                                   114754.
                                                            146078
##
  13
            60
                 33228
                         50887.
                                 68001.
                                          75016.
                                                    92168.
                                                            116899.
## 14
                81935
                         39100.
                                 55630.
                                          62218.
                                                    69391.
            65
                                                             96862.
## 15
            70
                    NA
                         28168.
                                 40343.
                                          47106.
                                                    52751.
                                                             71780.
## 16
            75
                    NA
                         19497.
                                 25655.
                                          32527.
                                                    40108
                                                             47783.
## 17
            80
                    NA
                         11498.
                                 16190.
                                          21170.
                                                    26643.
                                                             30152.
## 18
            85
                         23975.
                                 20595.
                                          21884.
                    NA
                                                    28983
                                                             27737.
Thiele log-Normal Hump RW
```

##

##

user

47.75

system elapsed

49.12

1.30

[1] "relative convergence (4)"

Thiele log-Normal Hump RW (Pop 5-9 to 70-74, DHS 15-19 to 45-49)

```
## user system elapsed
## 38.83 1.11 40.06
```

[1] "relative convergence (4)"

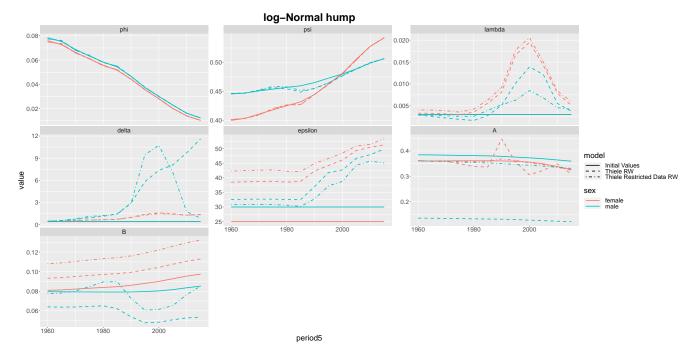


Figure 1: Estimated parameters

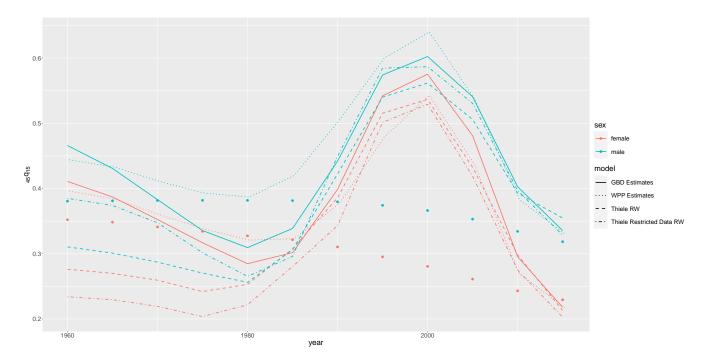


Figure 2: Estimated $_{45}q_{15}$

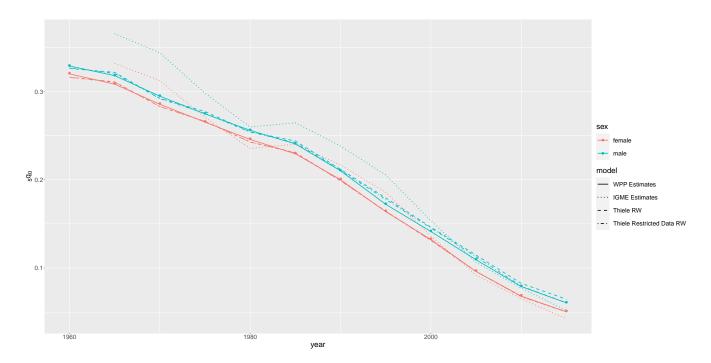


Figure 3: Estimated $_5q_0$

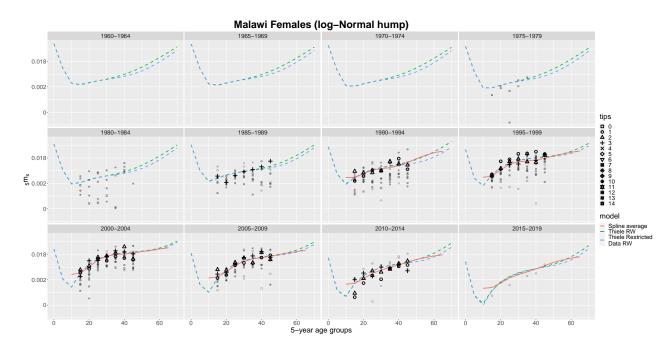


Figure 4: Mortality Schedules

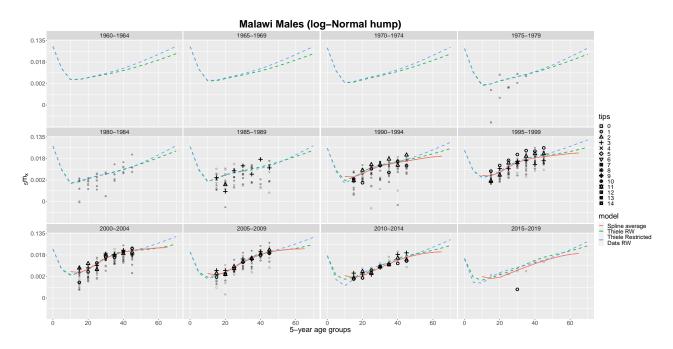


Figure 5: Mortality Schedules

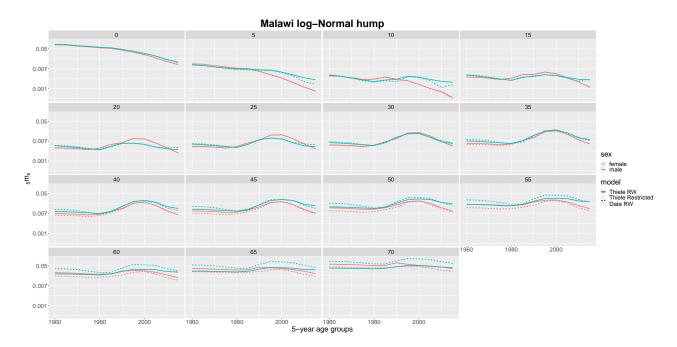


Figure 6: Mortality Schedules

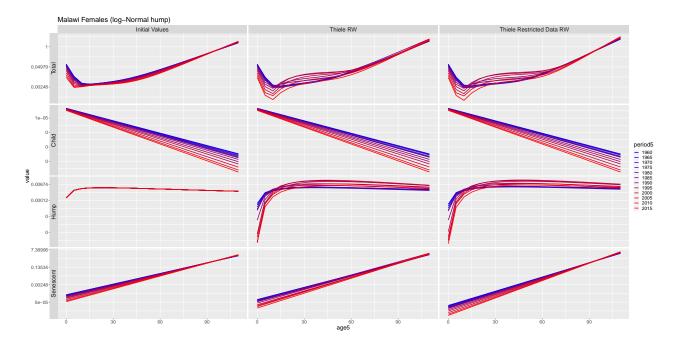


Figure 7: Thiele Decomposed

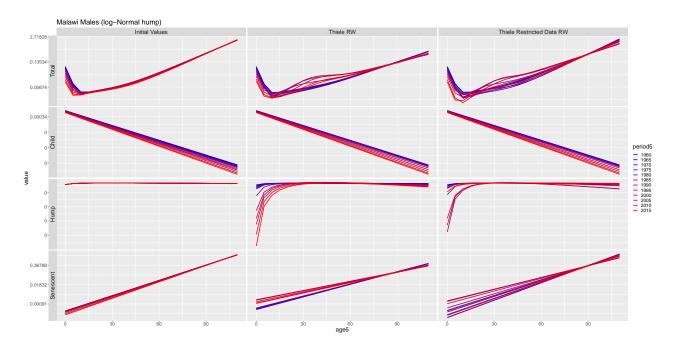


Figure 8: Thiele Decomposed

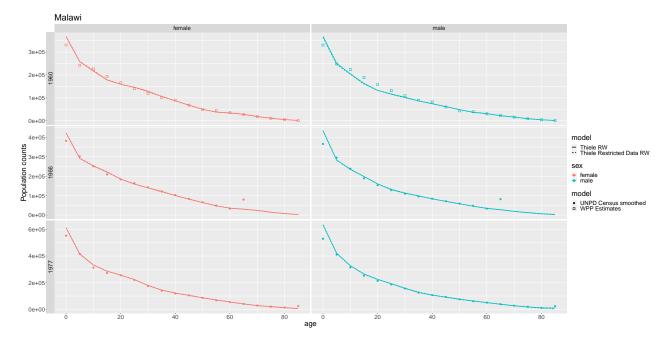


Figure 9: Population

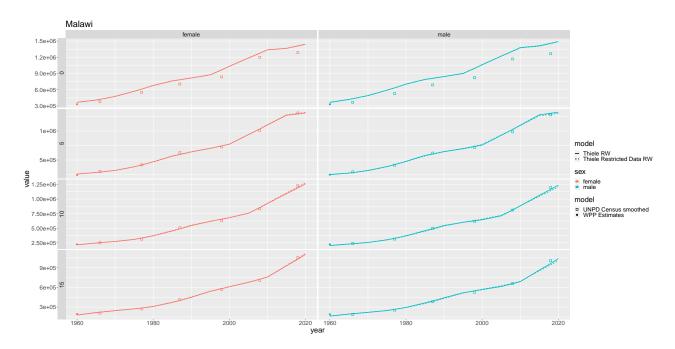


Figure 10: Population

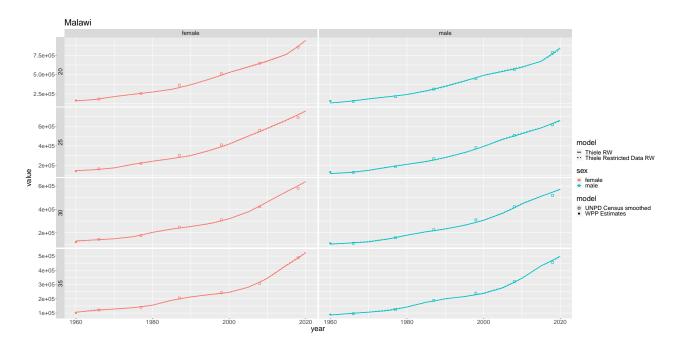


Figure 11: Population

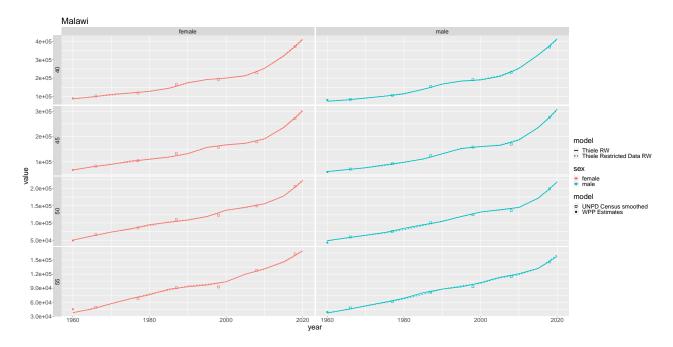


Figure 12: Population

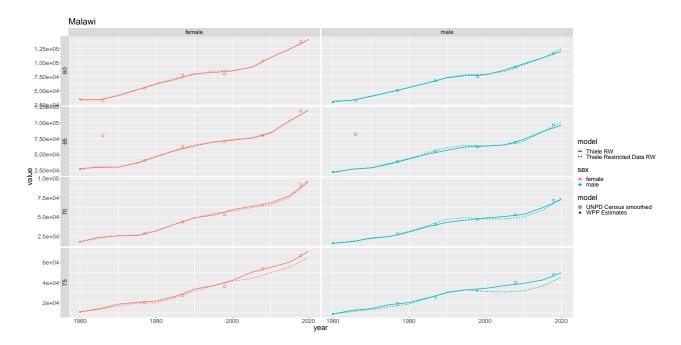


Figure 13: Population

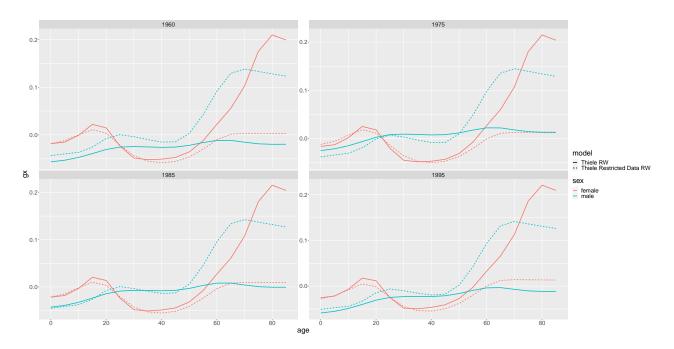


Figure 14: Migration

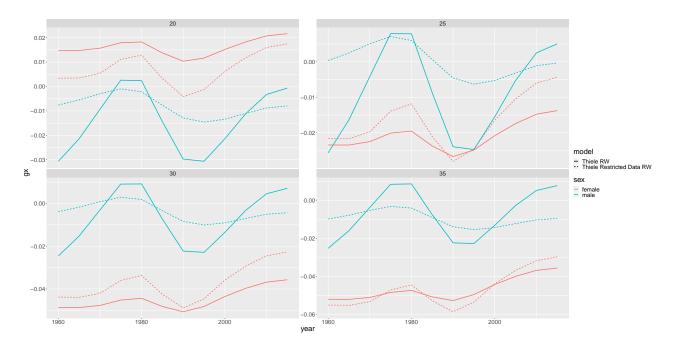


Figure 15: Migration

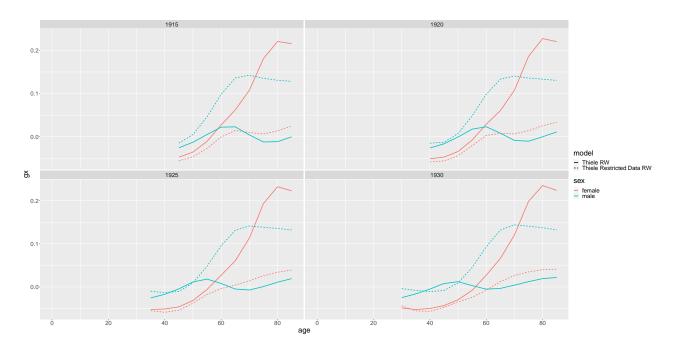


Figure 16: Migration

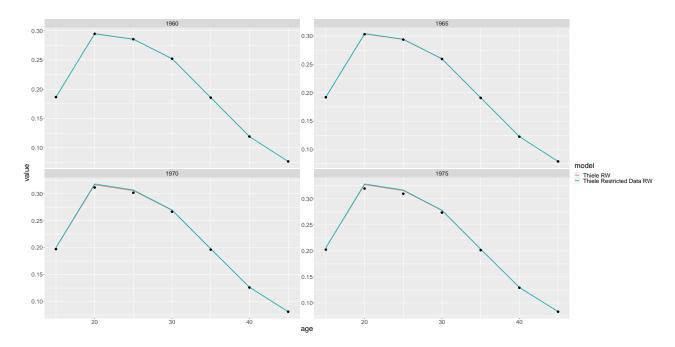


Figure 17: Fertility

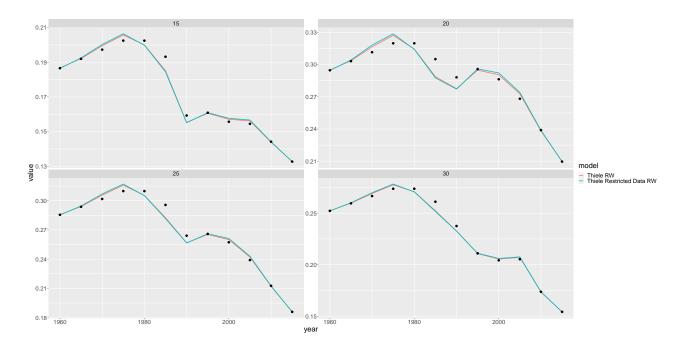


Figure 18: Fertility