Rwanda

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

## # A tibble: 18 x 5
##    aggr.age  `1978`  `1991`  `2002`  `2012`
## *     <dbl>   <dbl>   <dbl>   <dbl>   <dbl>
## 1         0 466037. 653170  665141  771978
## 2         5 361325. 580142. 577688  765565
## 3        10 304639. 474522. 558736. 655970.
## 4        15 275639. 373865  494688. 588830.
## 5        20 231462. 308889. 420437  520983.
## 6        25 173641. 269890  337174. 453729
## 7        30 130320. 233112. 264493. 379522.
## 8        35 111521. 182968. 215660. 305718.
## 9        40 100240. 133279. 179419. 244142.
## 10       45  86457. 105644. 146335. 200541
## 11       50  74057.  92709. 113963. 167144.
## 12       55  62652.  79171.  86033. 136175.
## 13       60  49547.  64911.  65745. 104611
## 14       65  32385.  50270.  50987.  76197.
## 15       70  13319.  40610.  38045.  54853.
## 16       75  22368.  35965.  21734.  39347.
## 17       80      NA      NA   14707   26706.
## 18       85      NA      NA    8231   26496.

## [1] "Census Males"

## # A tibble: 18 x 5
##    aggr.age  `1978`  `1991`  `2002`  `2012`
## *     <dbl>   <dbl>   <dbl>   <dbl>   <dbl>
## 1         0 462588. 644055  655090  768049
## 2         5 358634. 566505  563351  757421
## 3        10 303160. 460628. 536404. 640364.
## 4        15 273928. 358739. 463566. 569188.
## 5        20 226121. 293768. 383778. 499650.
## 6        25 161692. 261421. 299168. 428454.
## 7        30 110684. 229449. 228871. 350632.
## 8        35  87492. 177671. 185847. 274429.
## 9        40  79283. 122634. 154300. 209778
## 10       45  71068.  86745. 123156. 167014.
## 11       50  61257.  71374.  91774. 136966.
## 12       55  51816.  62772.  65381. 108245.
## 13       60  42545.  52764.  47457.  79267
## 14       65  30119.  41664.  36184.  54291.
## 15       70  14043.  32755.  27764.  36581.
## 16       75  23333.  33020.  16255.  25146.
## 17       80      NA      NA   12081   17154.
## 18       85      NA      NA    6610   17077.
```

Thiele Normal Hump

```
##    user  system elapsed
## 161.17    1.24  163.66
```

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

Thiele log-Normal Hump

```
##    user   system elapsed
## 165.24    1.03  167.36
```

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

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

```
##    user   system elapsed
## 112.26    1.02  113.97
```
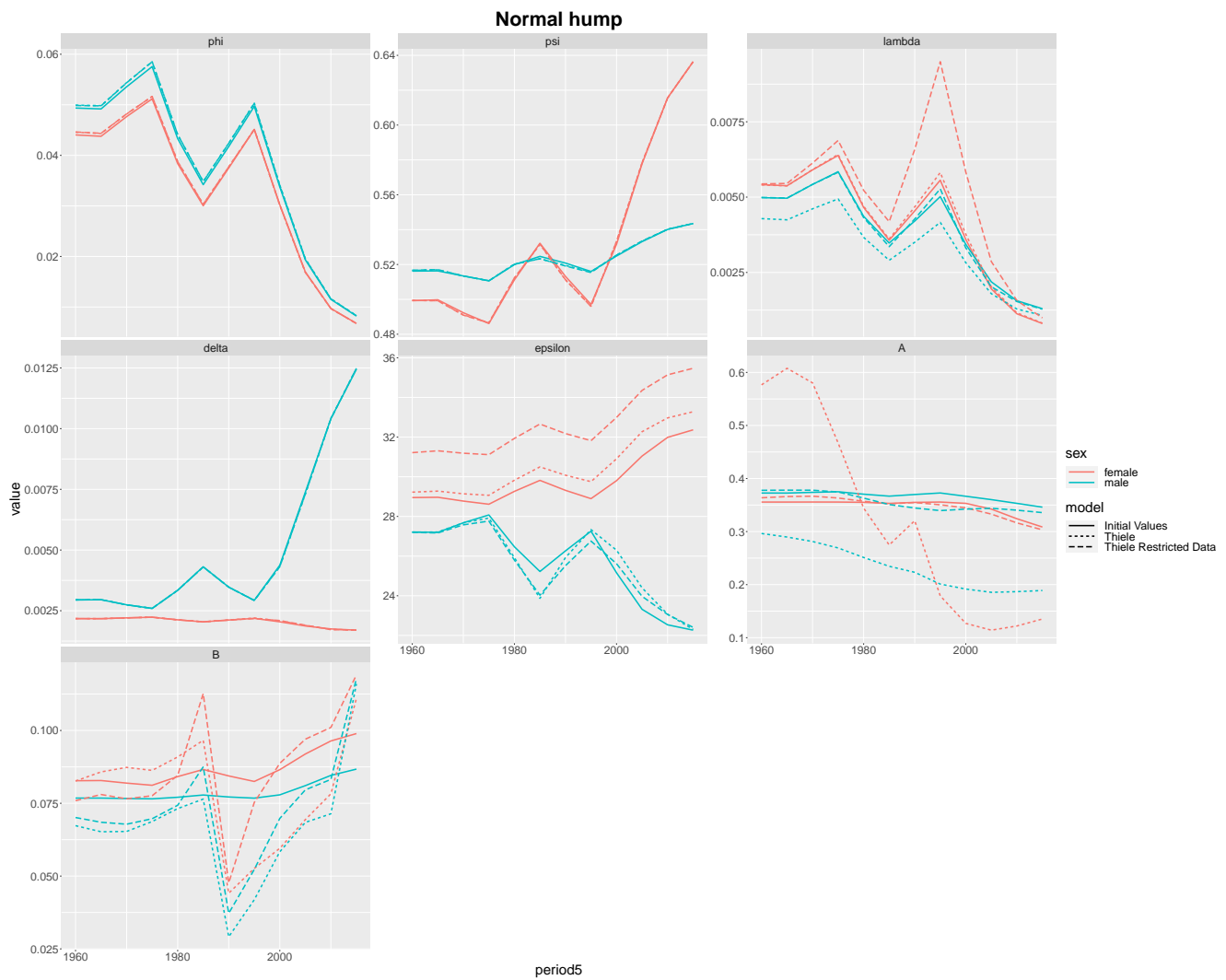
```
## [1] "relative convergence (4)"
```

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

```
##    user   system elapsed
## 118.70    0.90  120.31
```

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

Figure 1: Estimated parameters

```
## Using Sex as id variables
## Using Sex as id variables
## Warning: Removed 16 rows containing missing values (geom_point).
## Warning: Removed 16 rows containing missing values (geom_point).
## Warning: Removed 16 rows containing missing values (geom_point).
## Warning: Removed 16 rows containing missing values (geom_point).
## Warning: Removed 16 rows containing missing values (geom_point).
```
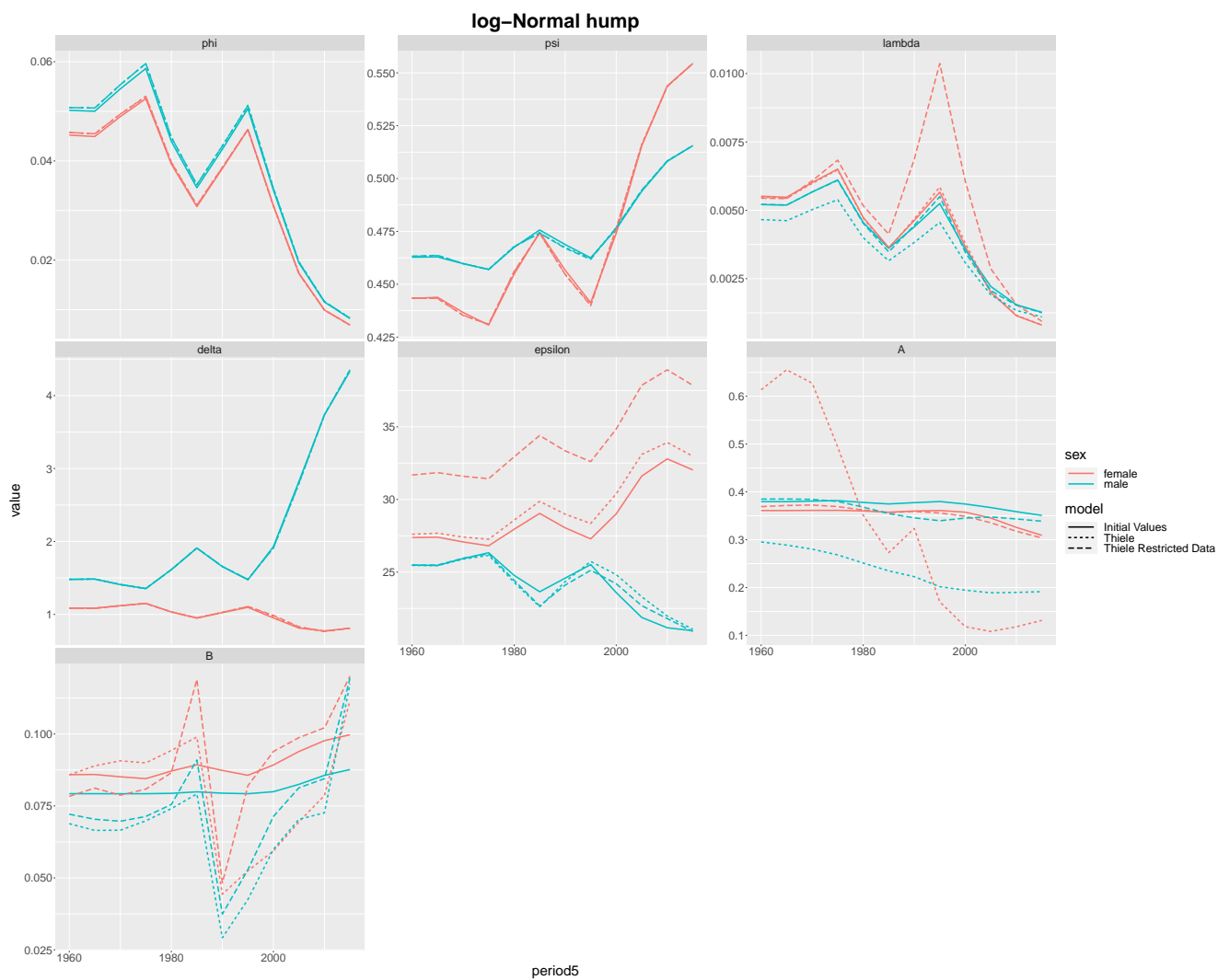
Figure 2: Estimated parameters
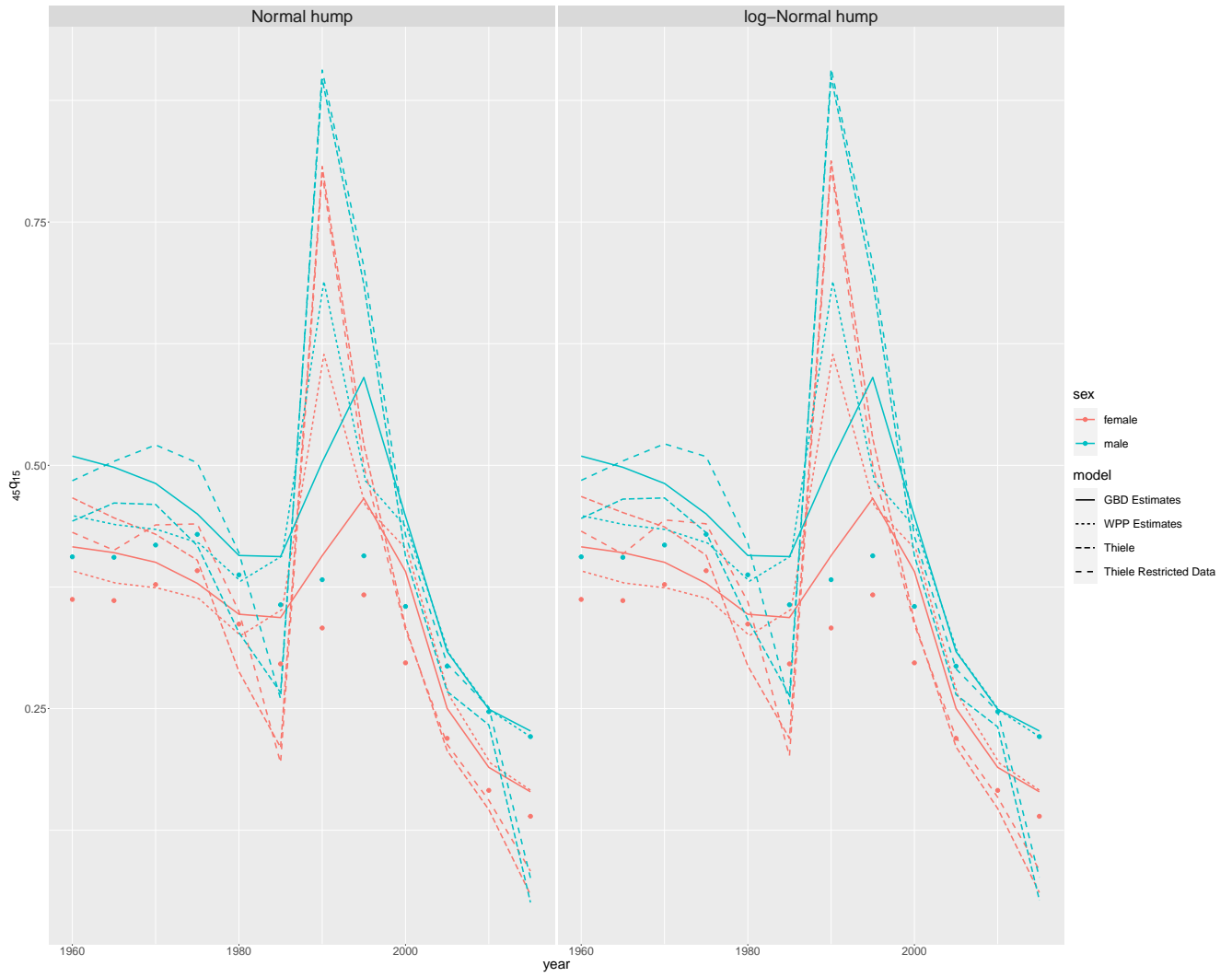
Figure 3: Estimated $_{45}q_{15}$
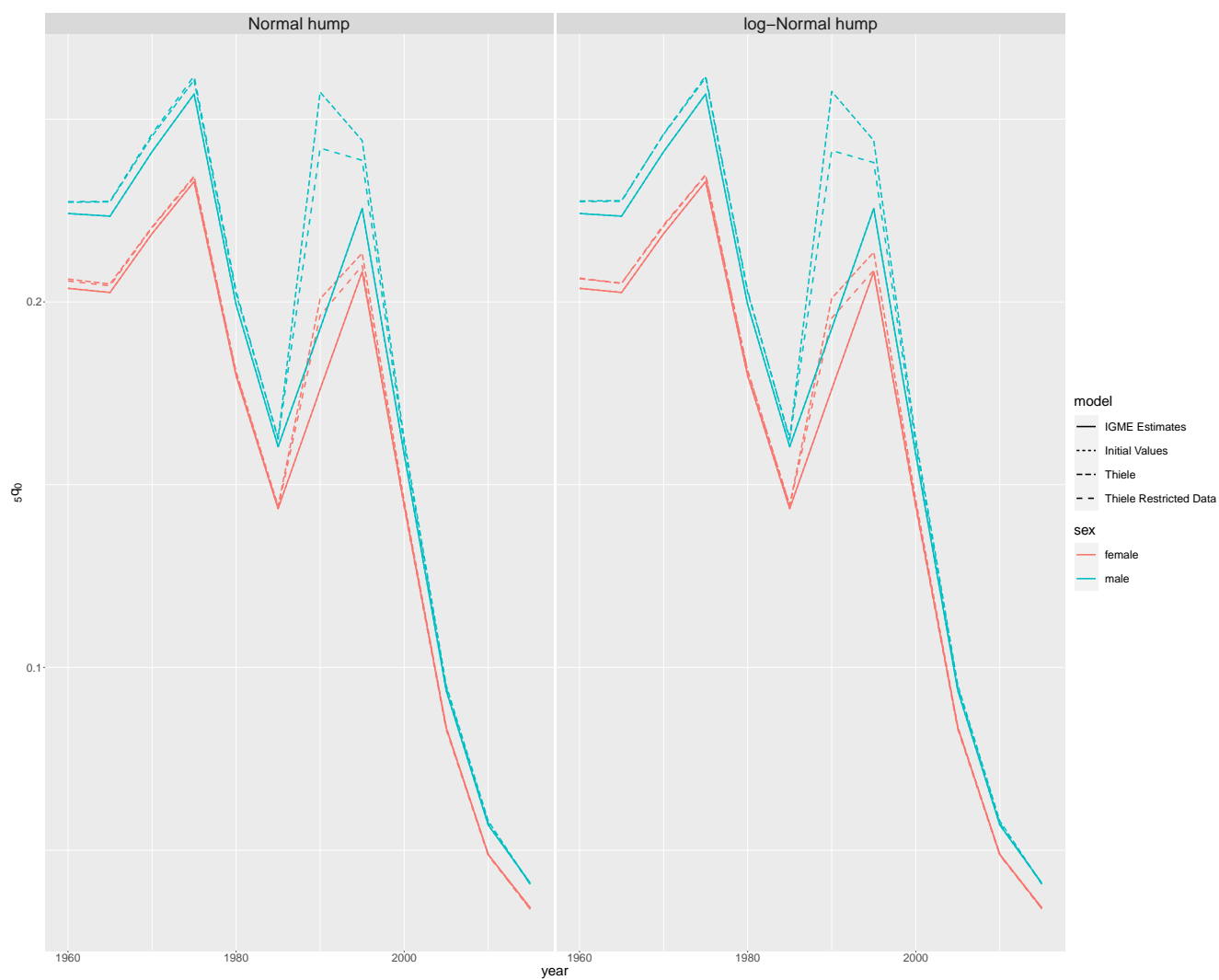
Figure 4: Estimated $_5q_0$
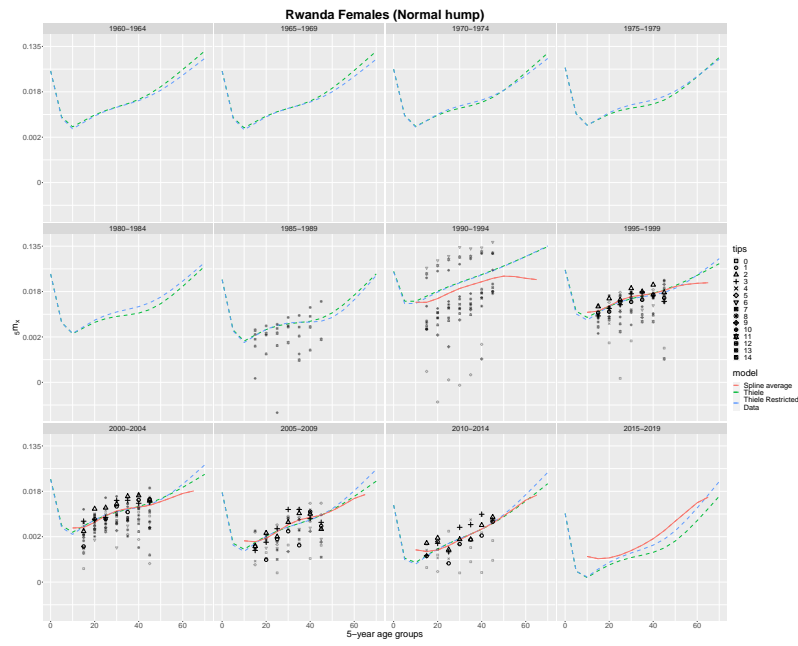
Figure 5: Mortality Schedules
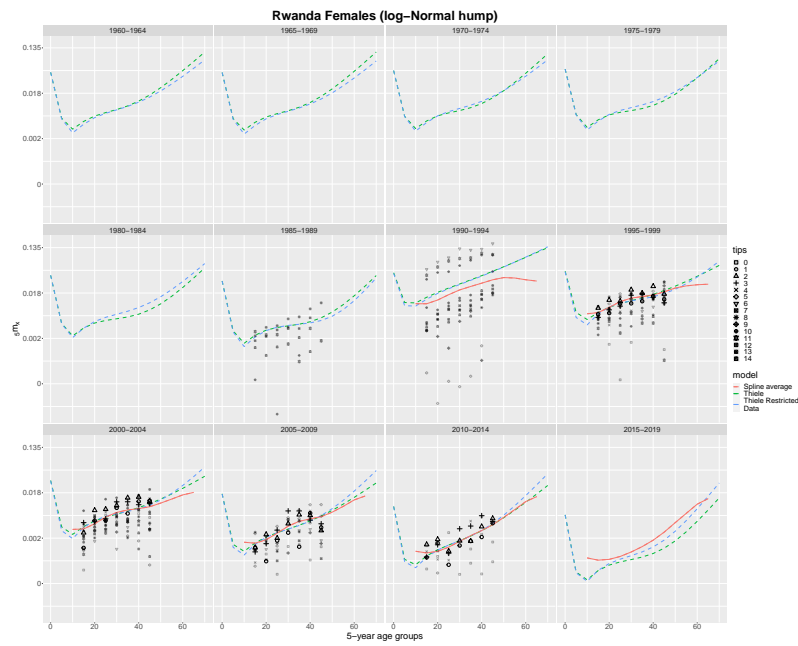
Figure 6: Mortality Schedules
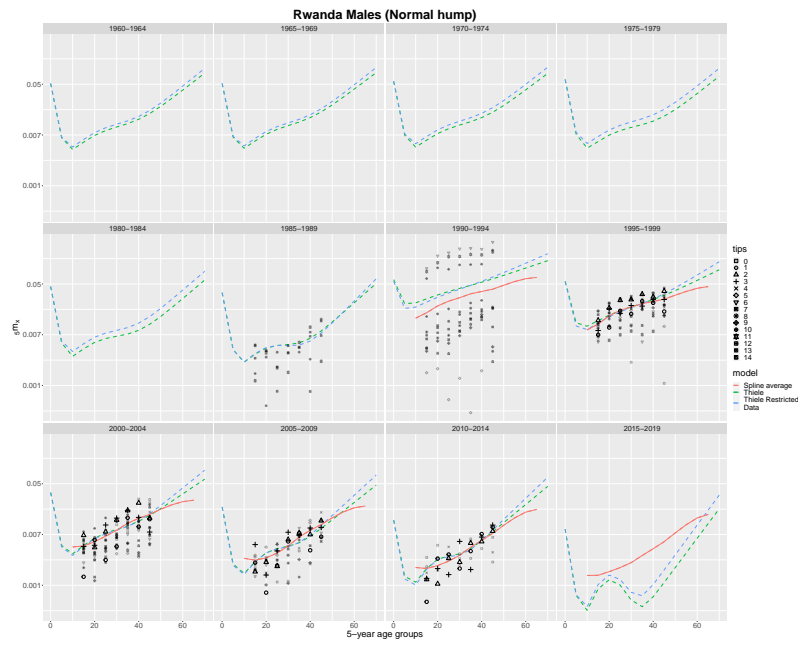
Figure 7: Mortality Schedules
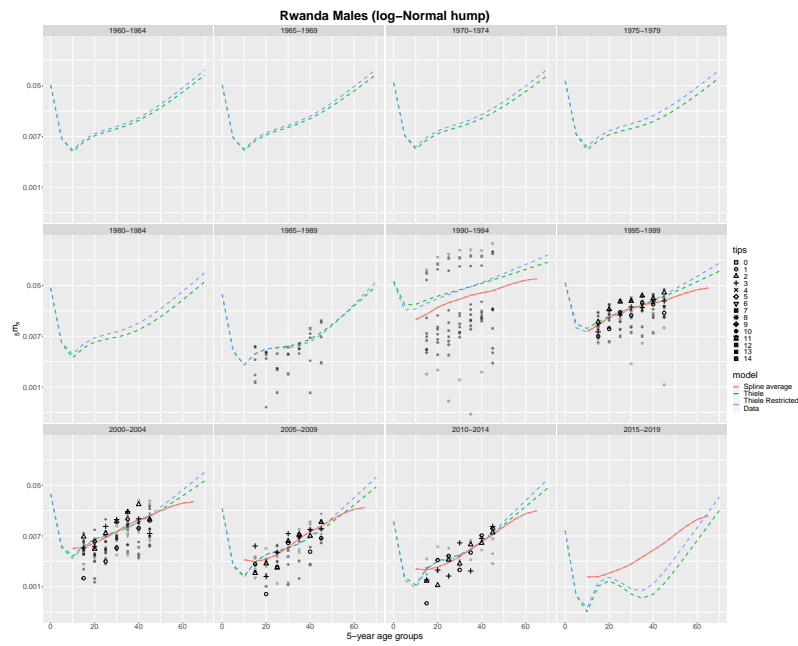
Figure 8: Mortality Schedules

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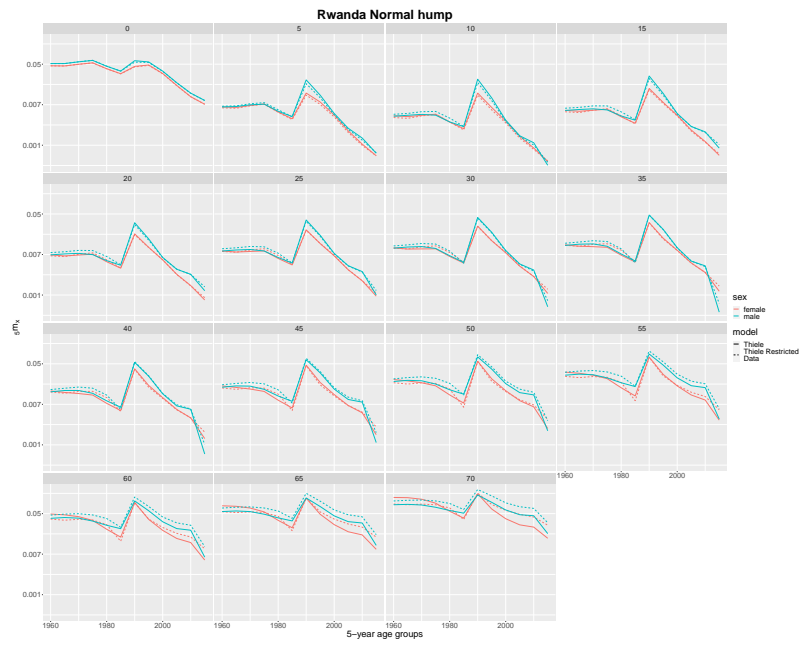
Figure 9: Mortality Schedules
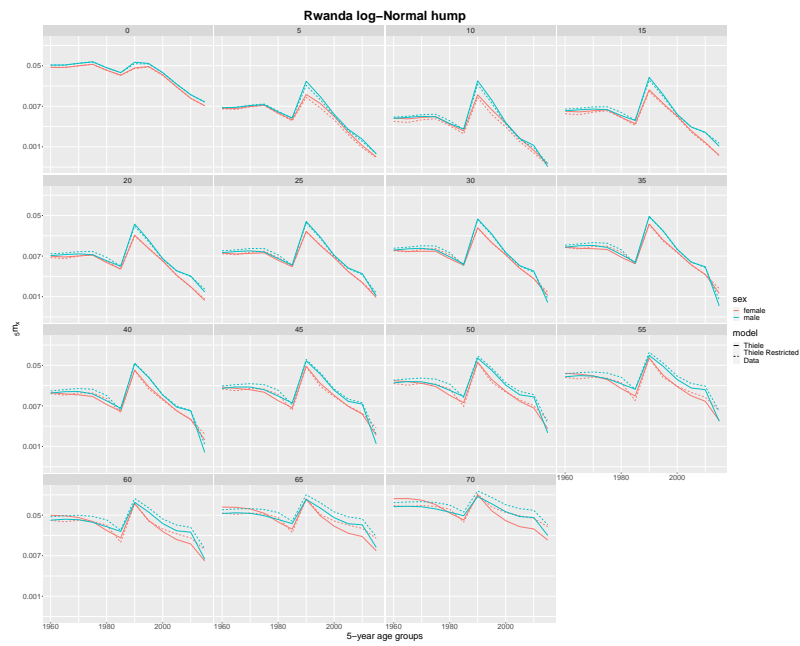
Figure 10: Mortality Schedules
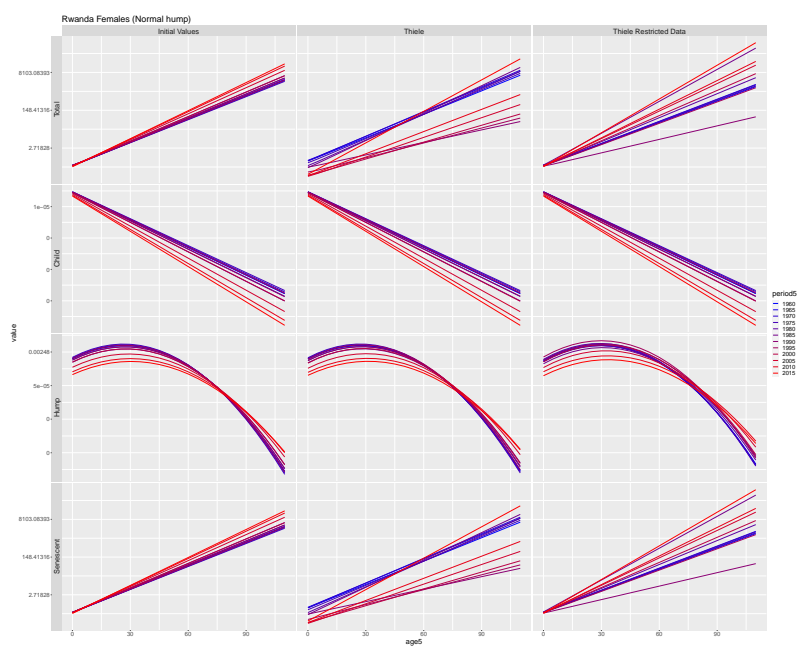
Figure 11: Thiele Decomposed
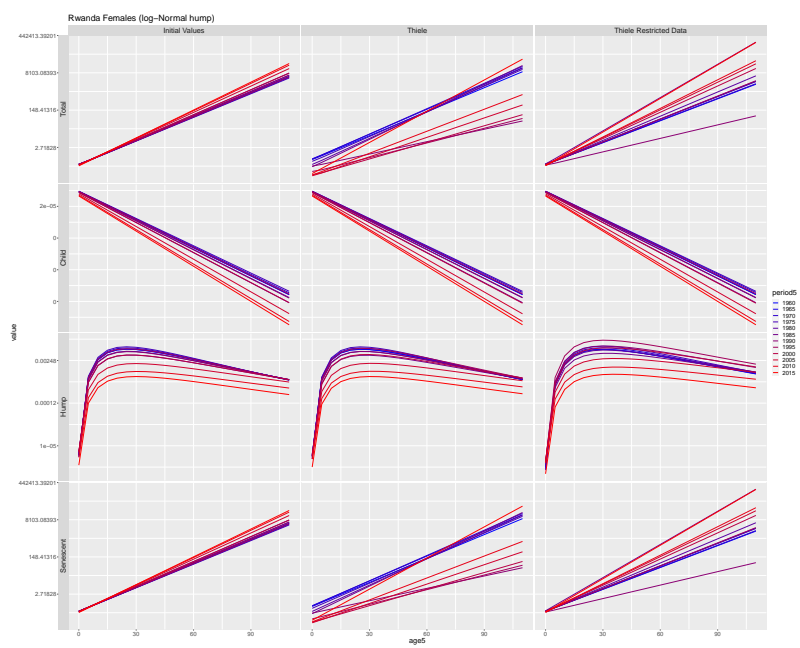
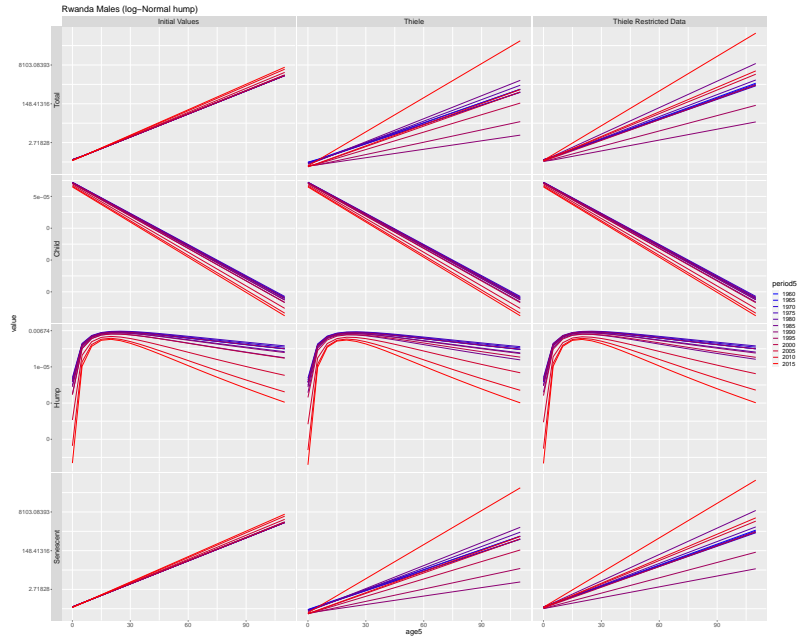
Figure 12: Thiele Decomposed
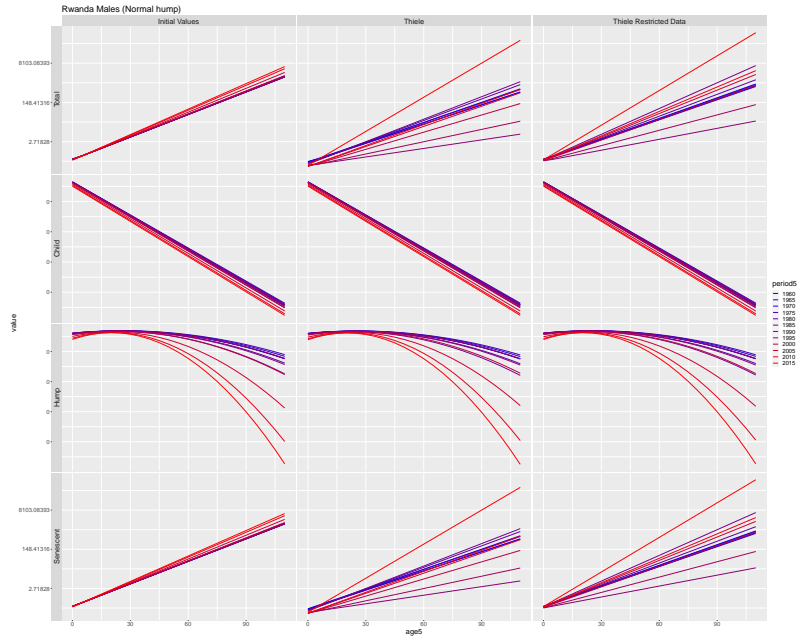
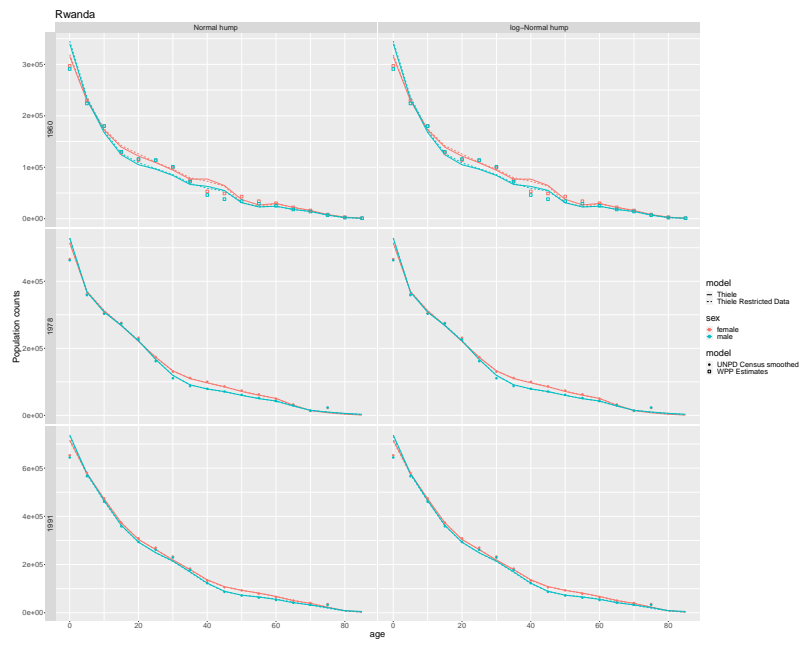Figure 13: Thiele Decomposed
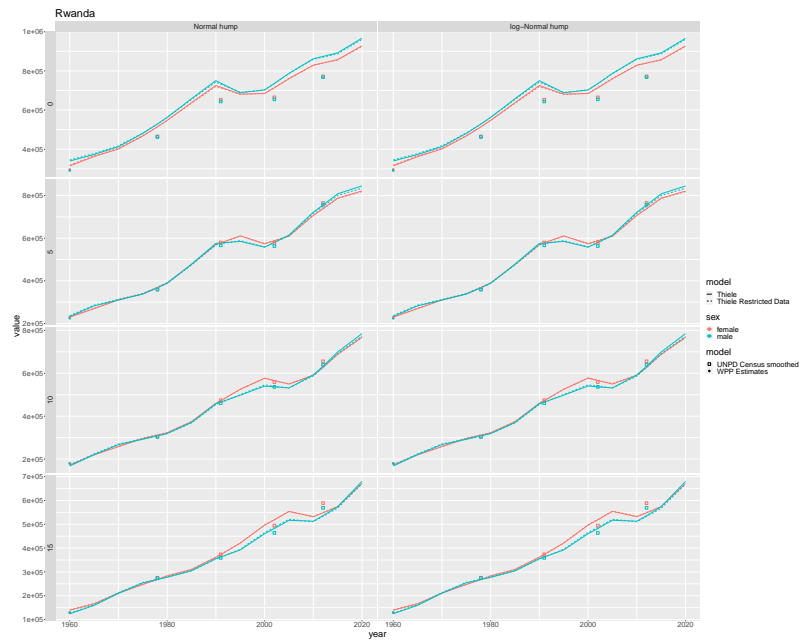

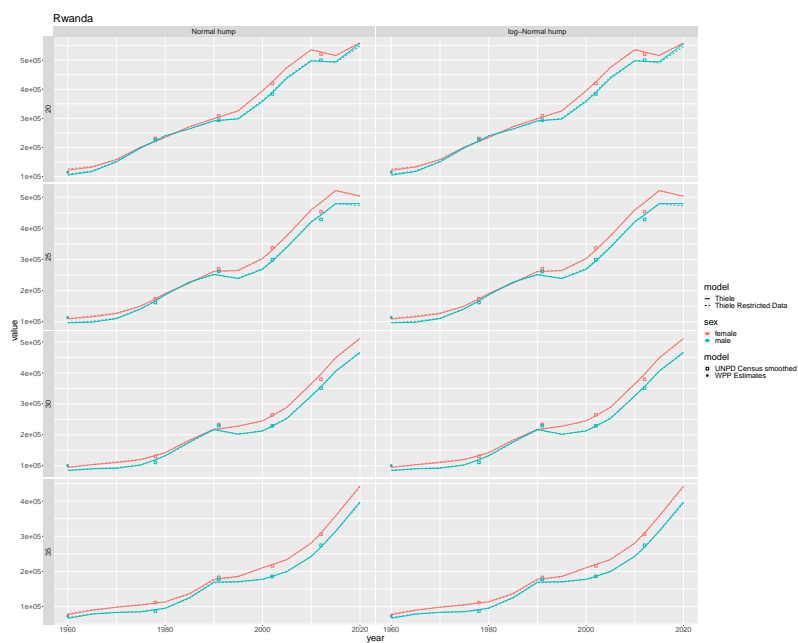Figure 14: Thiele Decomposed

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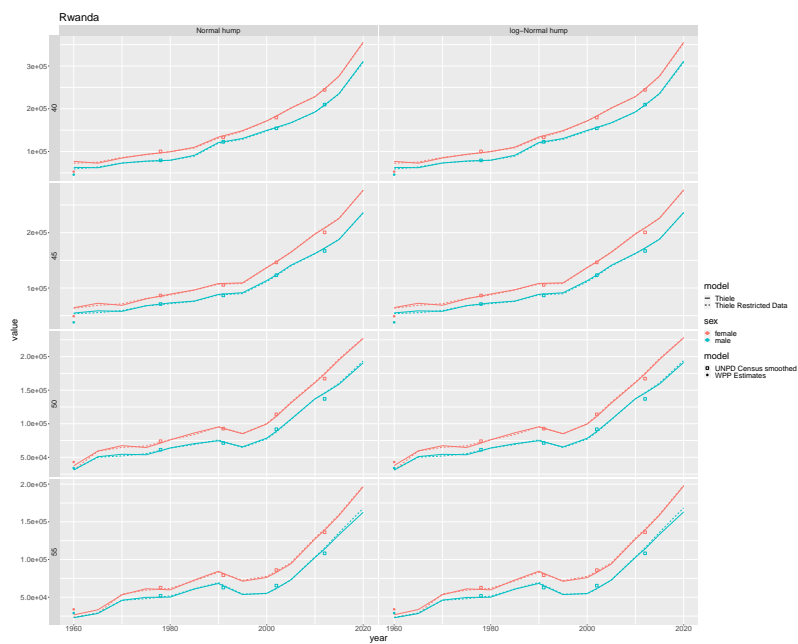Figure 15: Population

Figure 16: Population

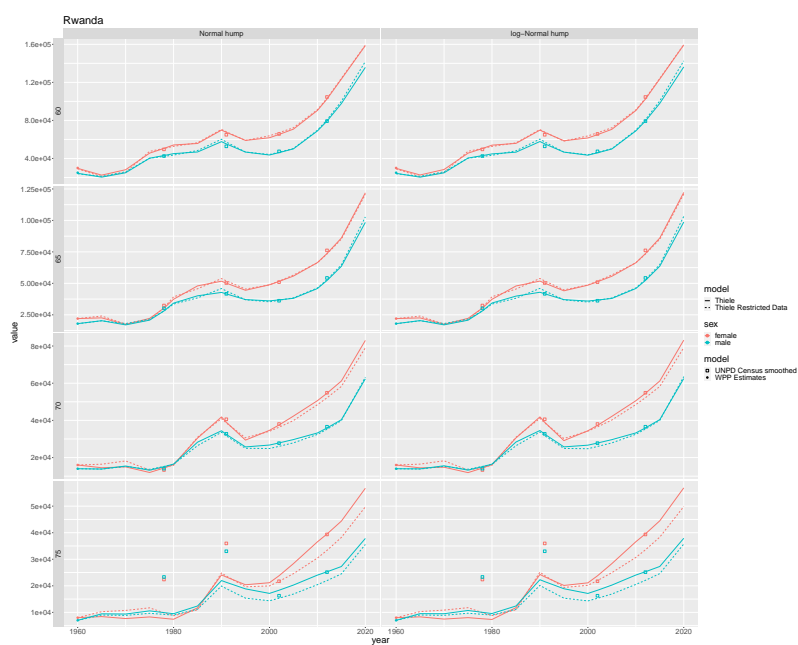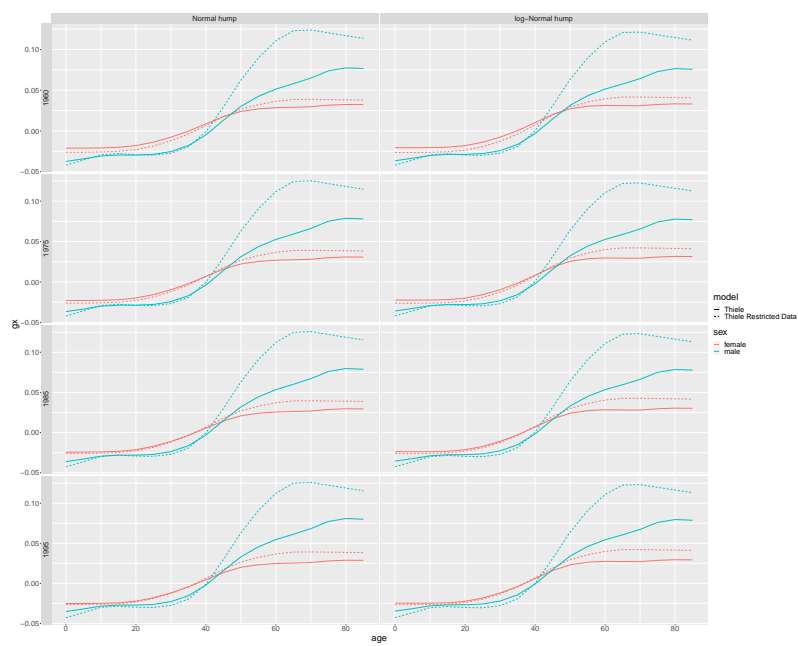Figure 17: Population

Figure 18: Population

13

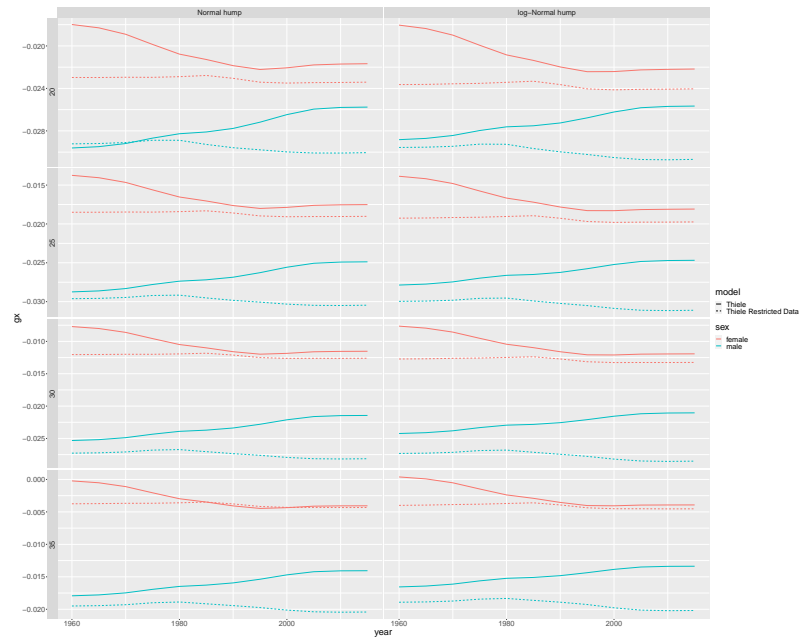Figure 19: Population
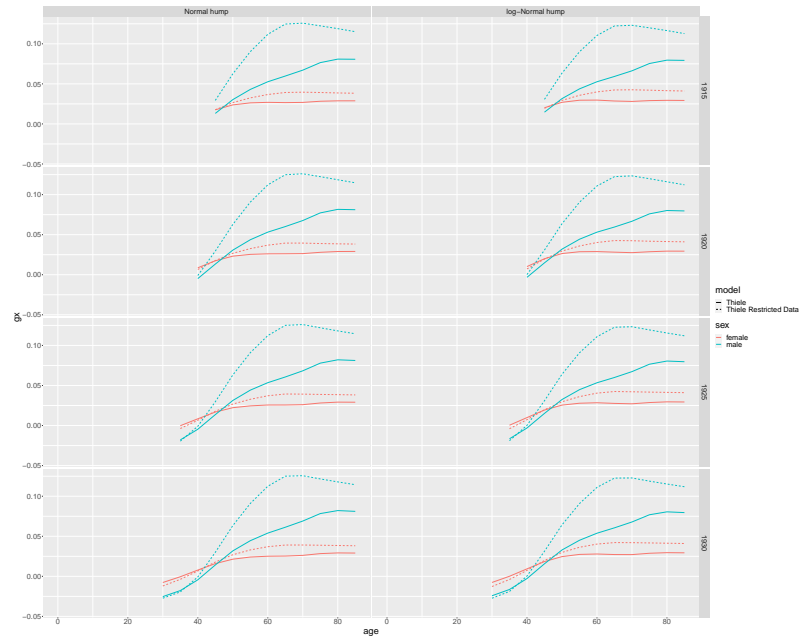

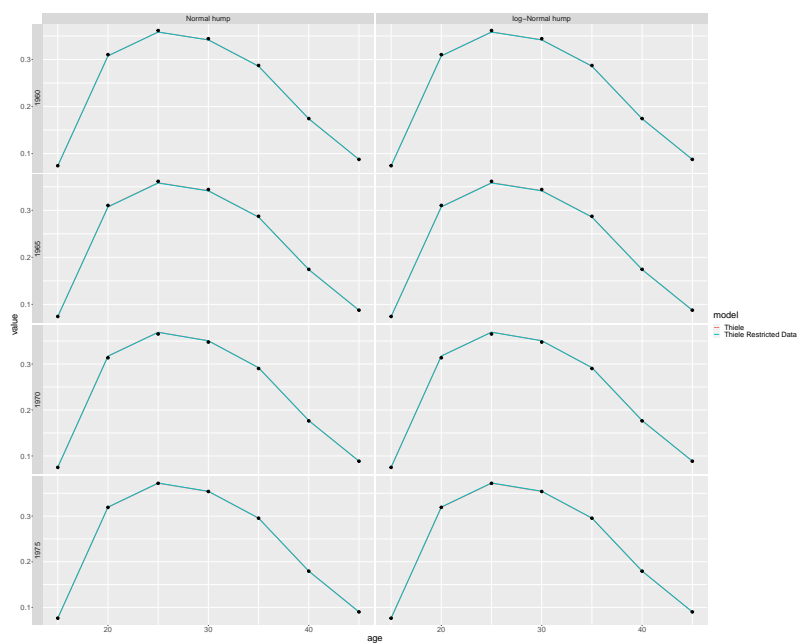Figure 20: Migration

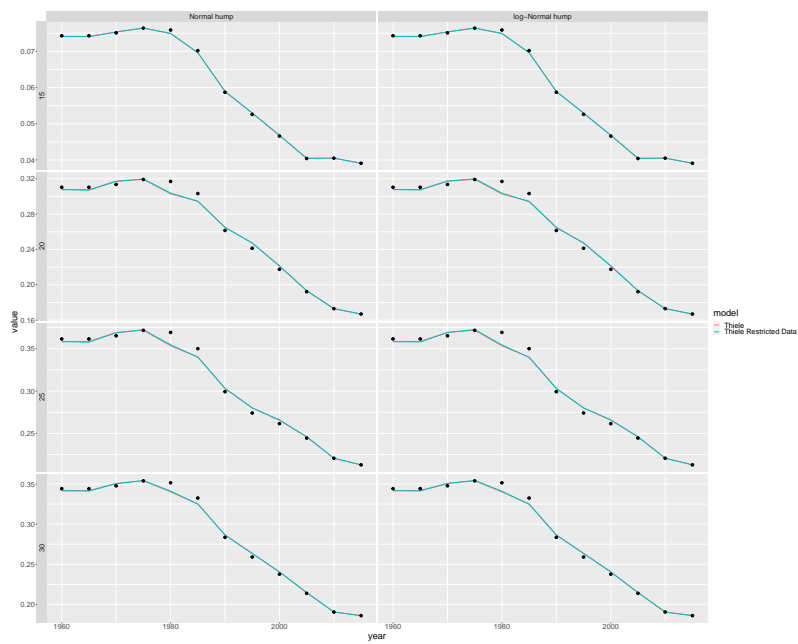Figure 21: Migration

Figure 22: Migration

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Figure 23: Fertility

Figure 24: Fertility