Benin

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

## # A tibble: 18 x 4
##    aggr.age  `1979`   `1992`   `2002`
## *     <dbl>   <dbl>    <dbl>    <dbl>
## 1         0 351457. 451209. 581721.
## 2         5 268180. 399795. 528394.
## 3        10 178950. 297938. 424443.
## 4        15 142937. 230898. 345842.
## 5        20 150307. 217909. 319031.
## 6        25 141563. 203308. 287531.
## 7        30 111638. 168389. 232635.
## 8        35  85508. 130473. 181653.
## 9        40  67925.  98650. 140434.
## 10       45  55549.  75216. 106912.
## 11       50  44515.  58443.  80354.
## 12       55  35211.  46576.  61064.
## 13       60  30311.  40848.  52252.
## 14       65  24816.  33119.  43100.
## 15       70  18851.  24260.  32546.
## 16       75  12313.  17574.  24279.
## 17       80  28474.  12703.  17811.
## 18       85     NA   20123.  29599.

## [1] "Census Males"

## # A tibble: 18 x 4
##    aggr.age  `1979`   `1992`   `2002`
## *     <dbl>   <dbl>    <dbl>    <dbl>
## 1         0 351689. 457215. 593589.
## 2         5 288221. 425746. 552851.
## 3        10 196031. 322971. 447134.
## 4        15 126149. 224359. 331492.
## 5        20 101019. 175298. 259297.
## 6        25  92613. 152515. 223049.
## 7        30  81036. 132135. 192641.
## 8        35  67610. 108568. 158344.
## 9        40  56596.  85645. 125995.
## 10       45  48757.  66981.  99224.
## 11       50  41032.  52336.  75992.
## 12       55  33835.  41489.  56863.
## 13       60  29670.  35493.  45486.
## 14       65  25324.  29766.  35834.
## 15       70  20368.  23877.  27073.
## 16       75  13851.  17867.  20036.
## 17       80  31178.  12656.  14361.
## 18       85     NA   21785.  25804.
```

Thiele Normal Hump

```
##    user  system elapsed
##   74.61    0.71   75.86
```

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

Thiele log-Normal Hump

```
##    user  system elapsed
## 72.65    0.64   73.81
```

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

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

```
##    user  system elapsed
## 58.05    0.60   58.94
```

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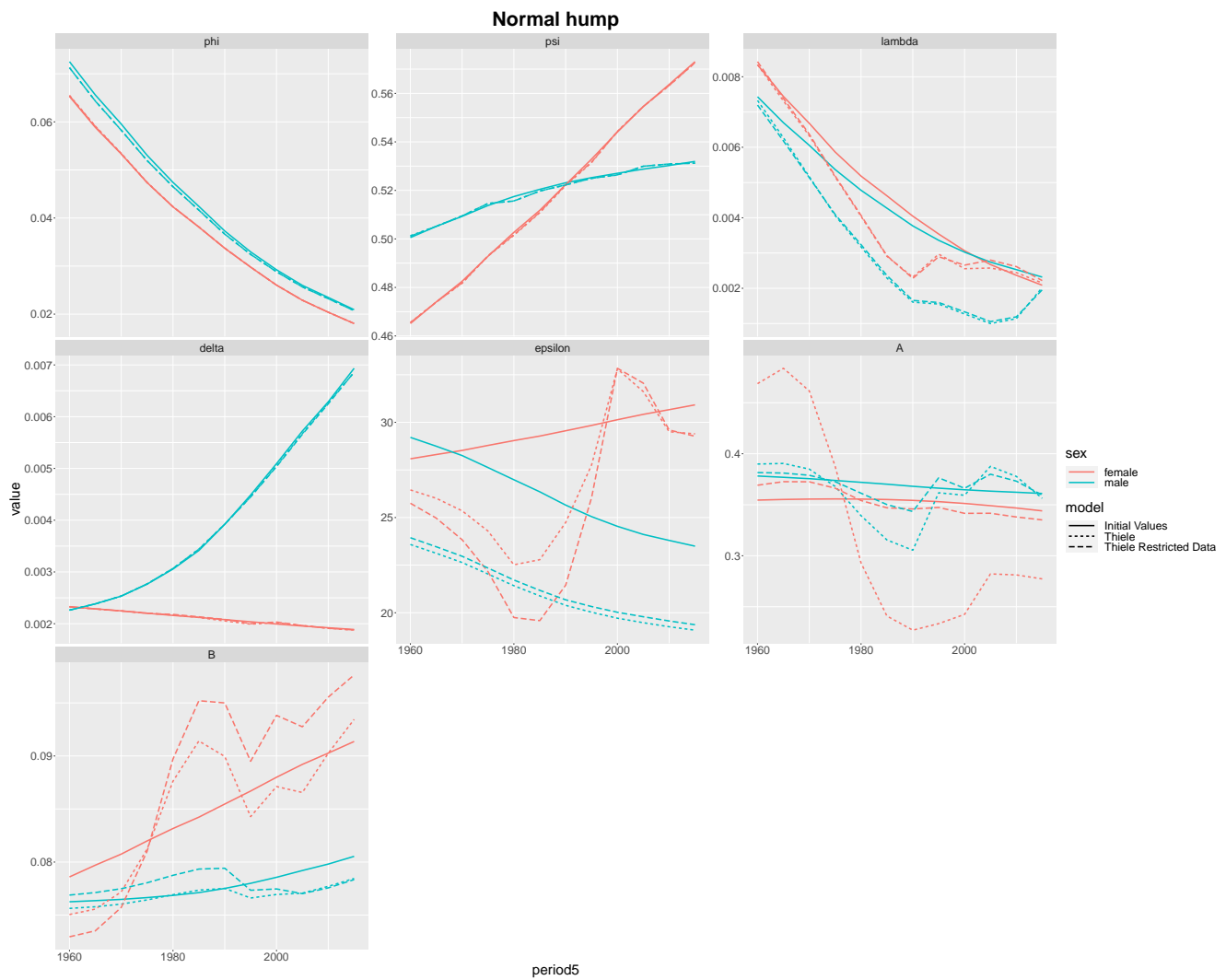```

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

```
##    user  system elapsed
## 62.99    0.52   63.81
```

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

Figure 1: Estimated parameters

```
## Using Sex as id variables
## Using Sex as id variables

## Warning: Removed 4 rows containing missing values (geom_point).

## Warning: Removed 4 rows containing missing values (geom_point).

## Warning: Removed 4 rows containing missing values (geom_point).

## Warning: Removed 4 rows containing missing values (geom_point).

## Warning: Removed 4 rows containing missing values (geom_point).
```
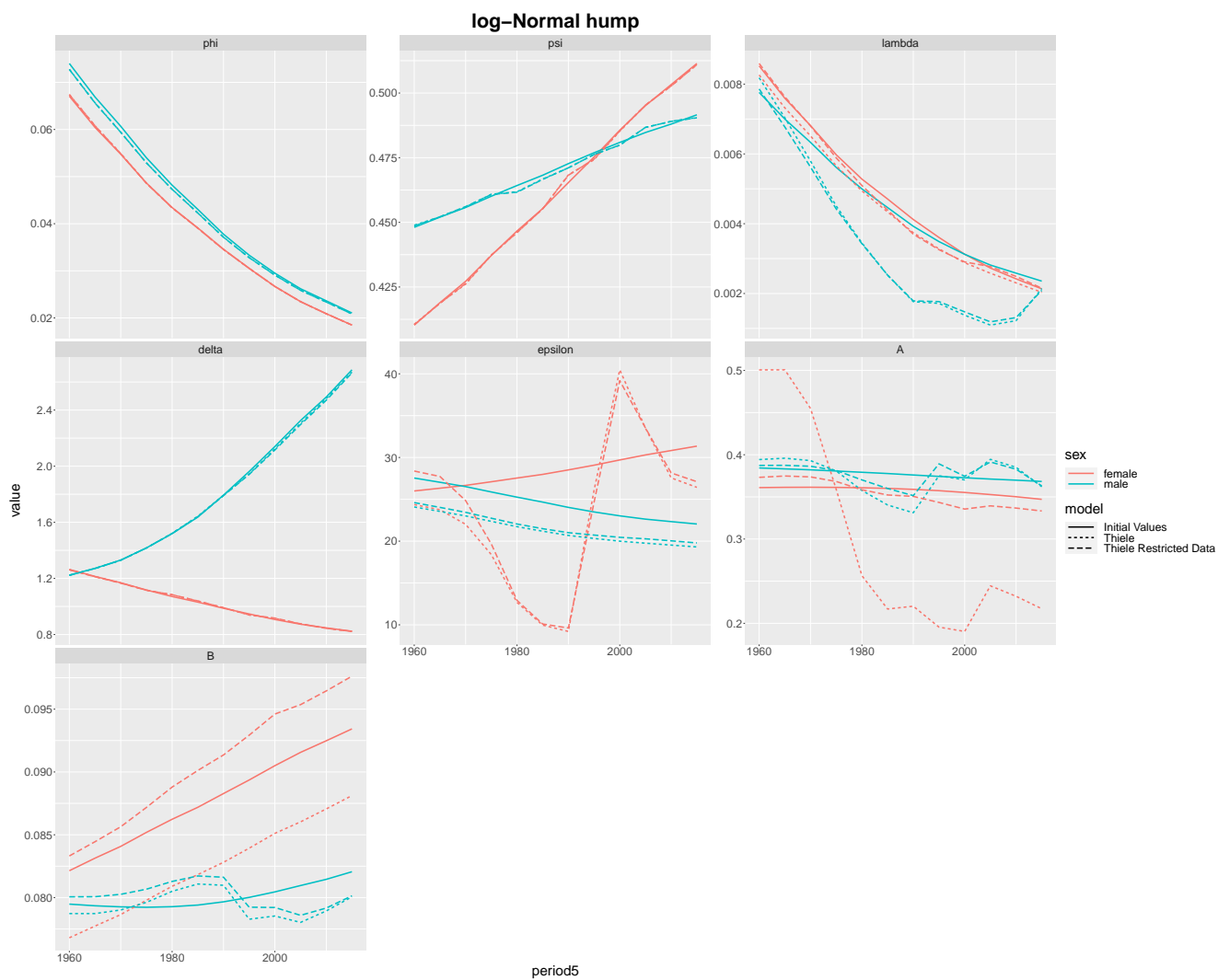
Figure 2: Estimated parameters

Figure 3: Estimated $_{45}q_{15}$
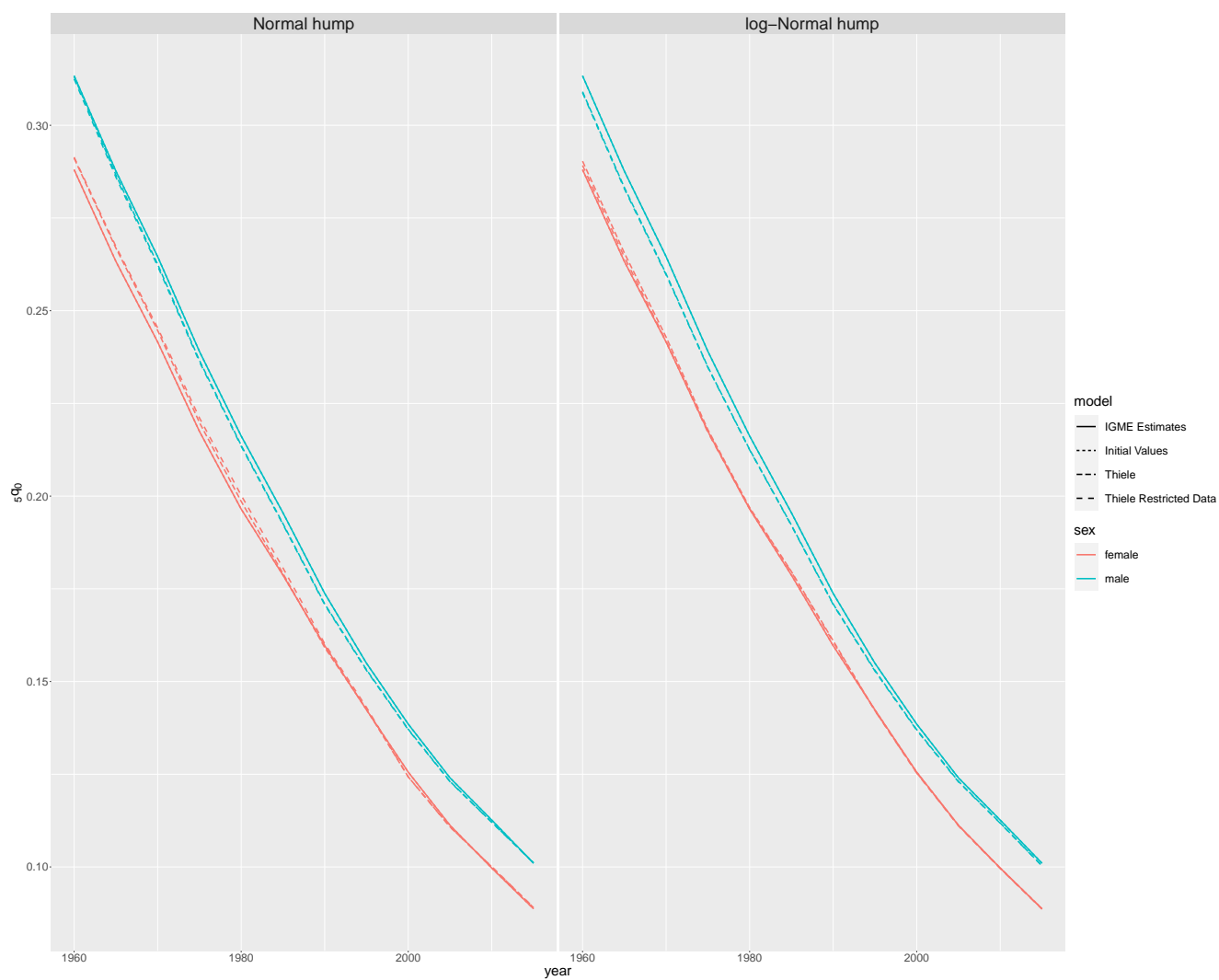
Figure 4: Estimated $_5q_0$
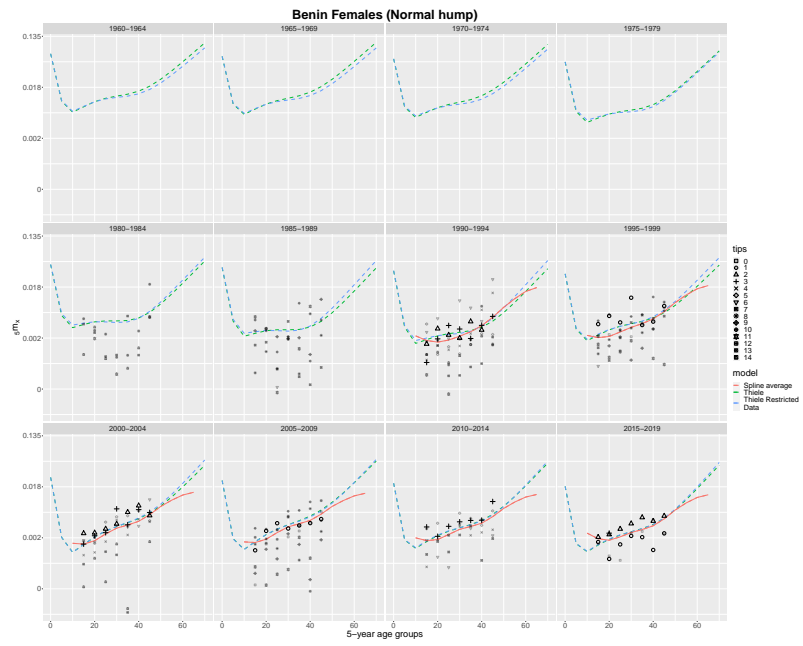
Figure 5: Mortality Schedules
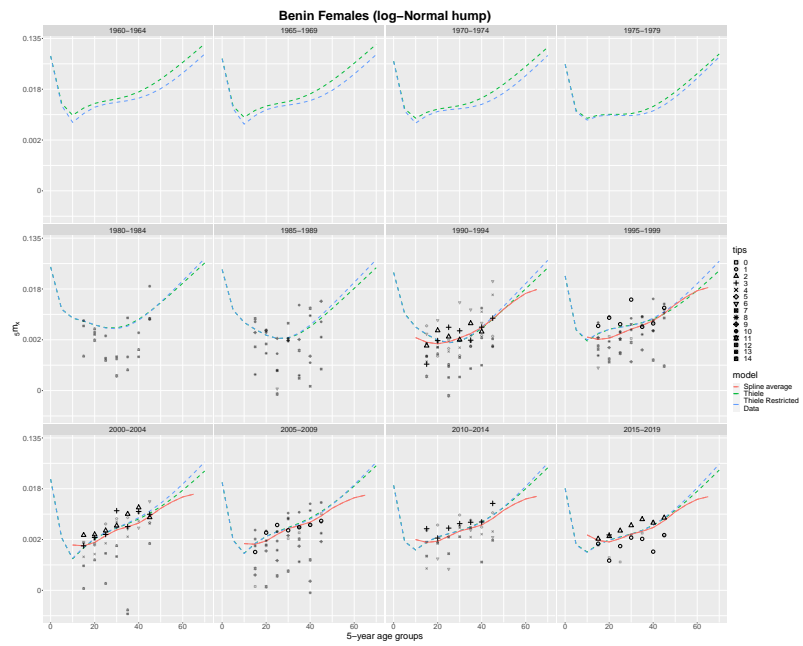
Figure 6: Mortality Schedules
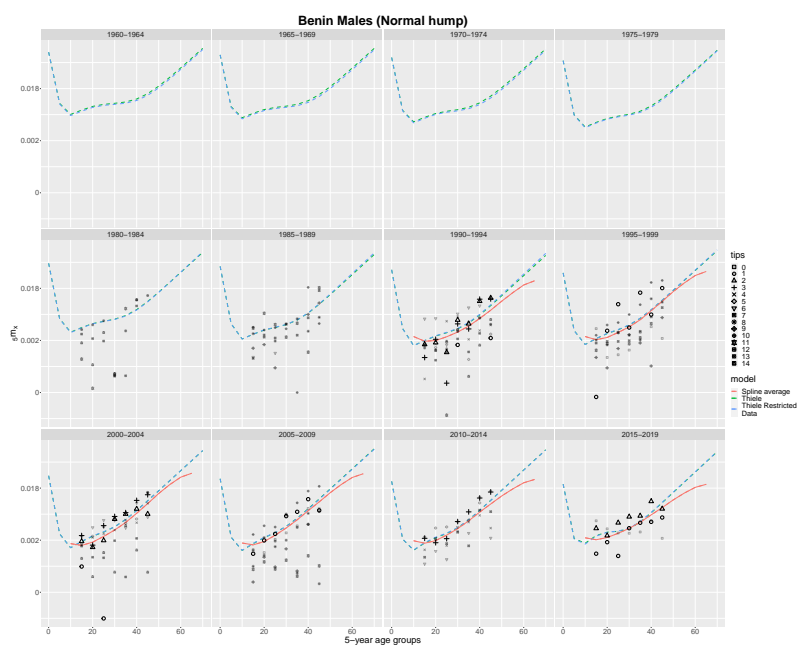
Figure 7: Mortality Schedules
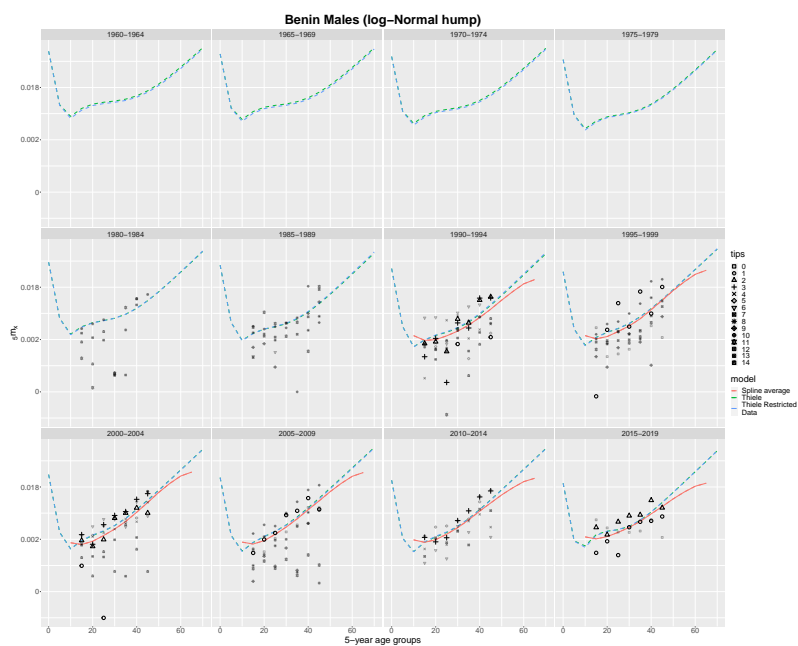
Figure 8: Mortality Schedules
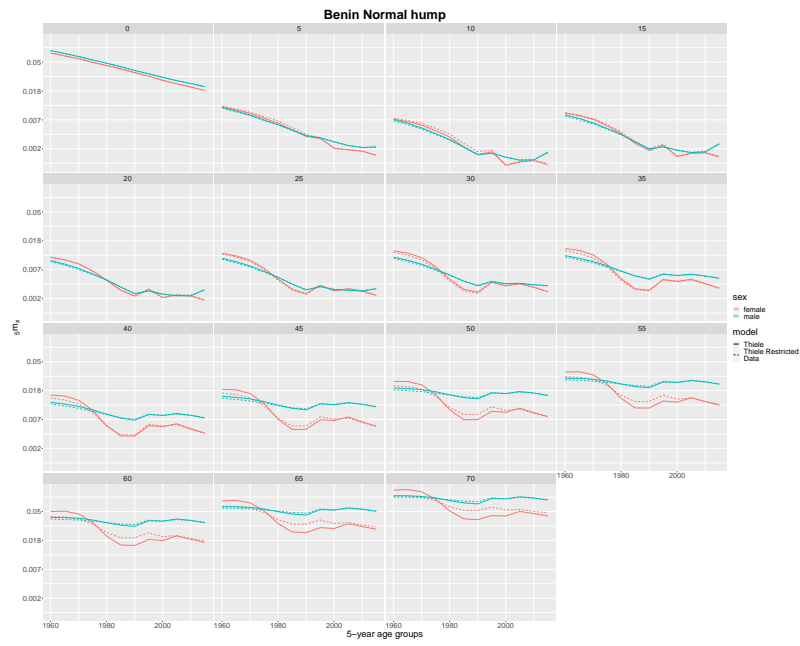
Figure 9: Mortality Schedules
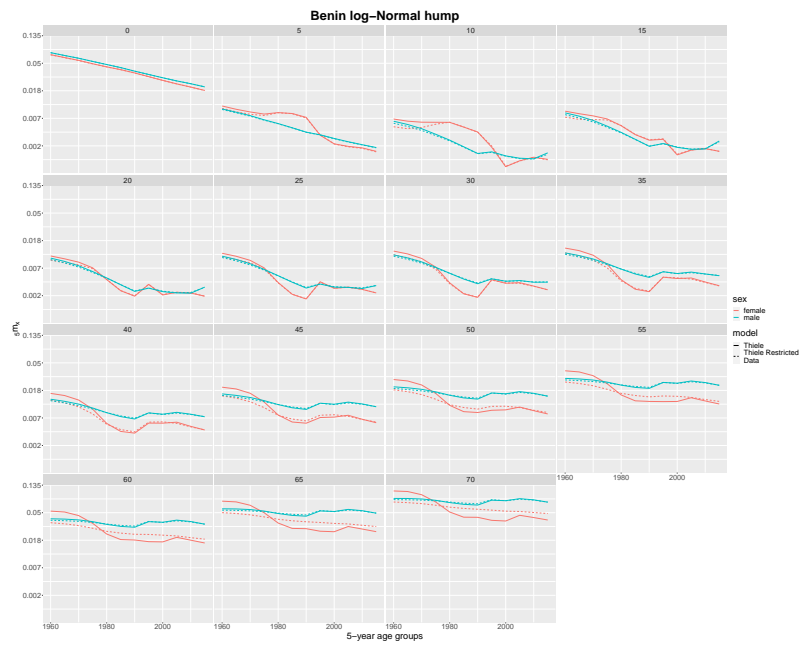
Figure 10: Mortality Schedules
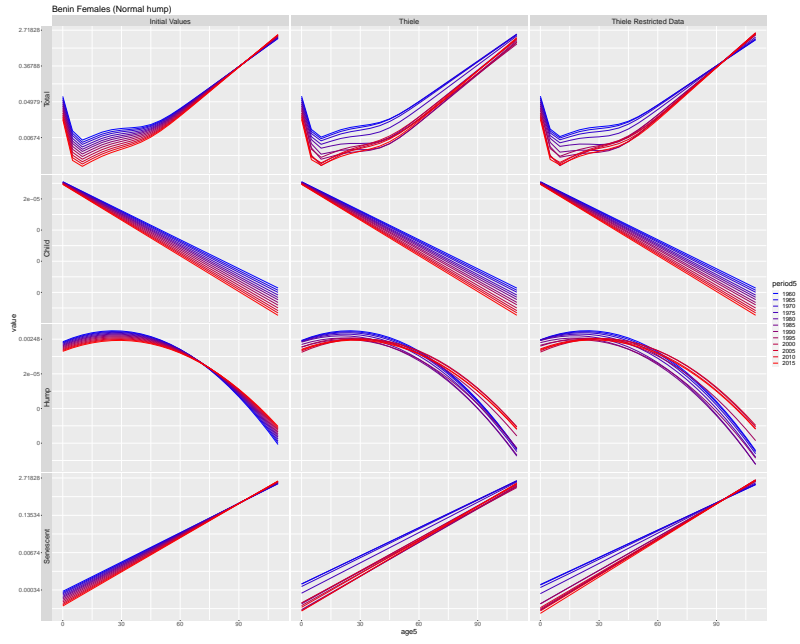
Figure 11: Thiele Decomposed
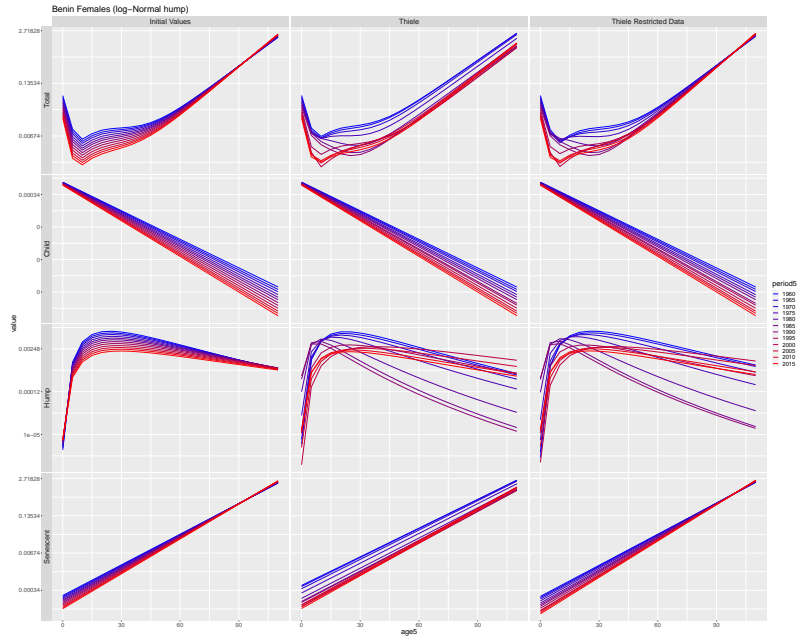
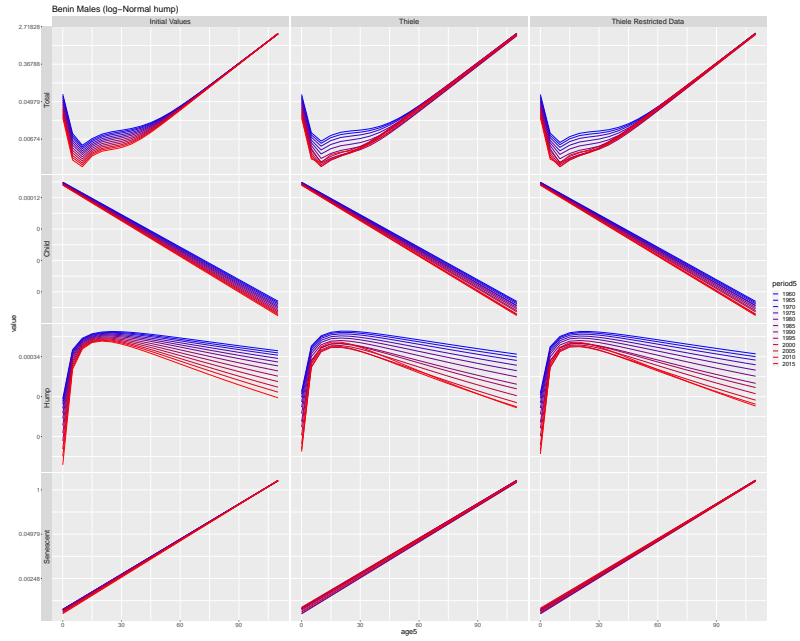Figure 12: Thiele Decomposed
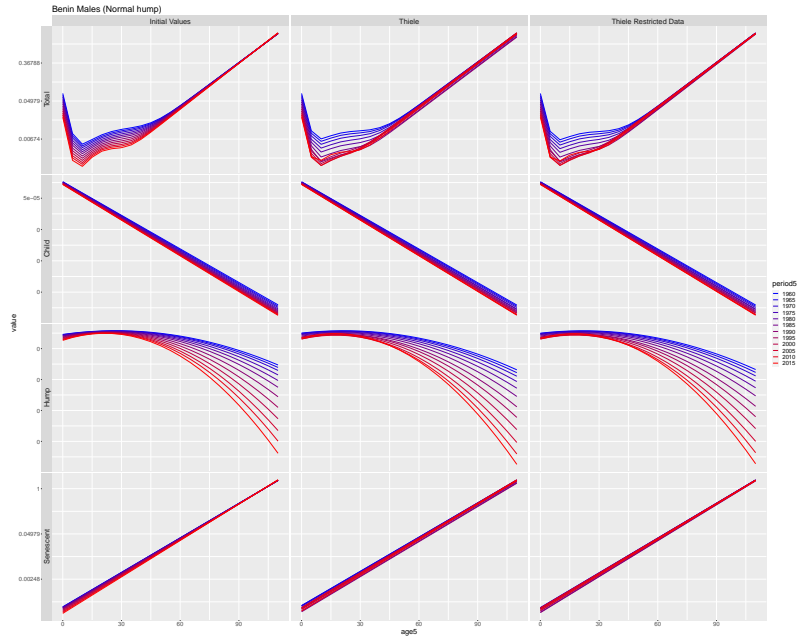
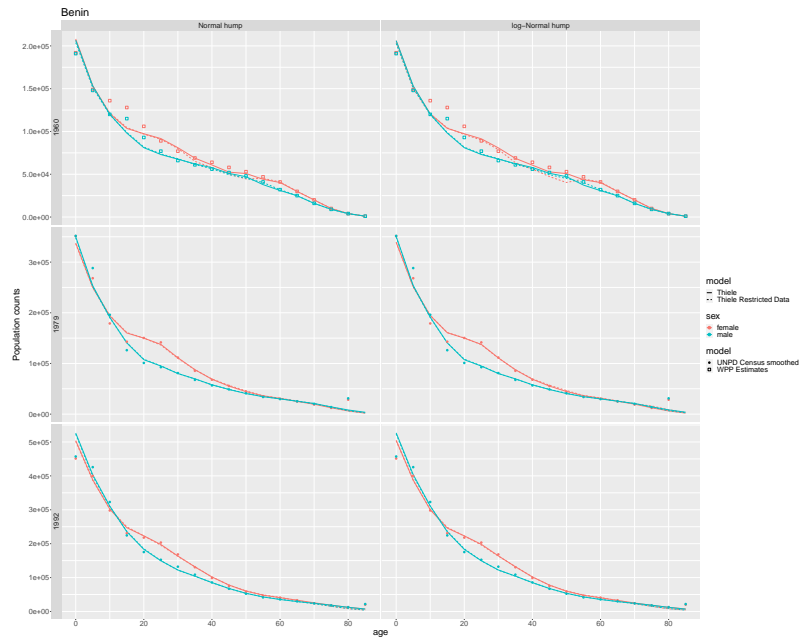Figure 13: Thiele Decomposed
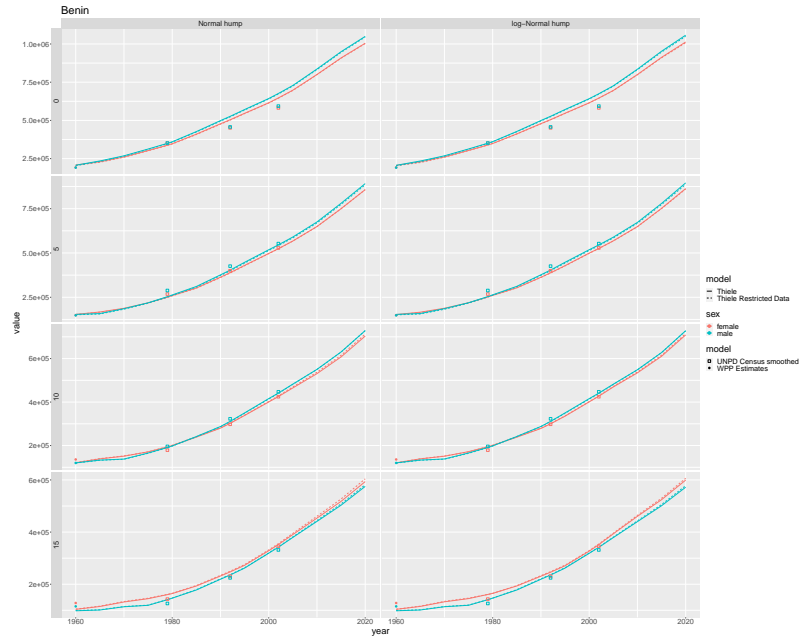

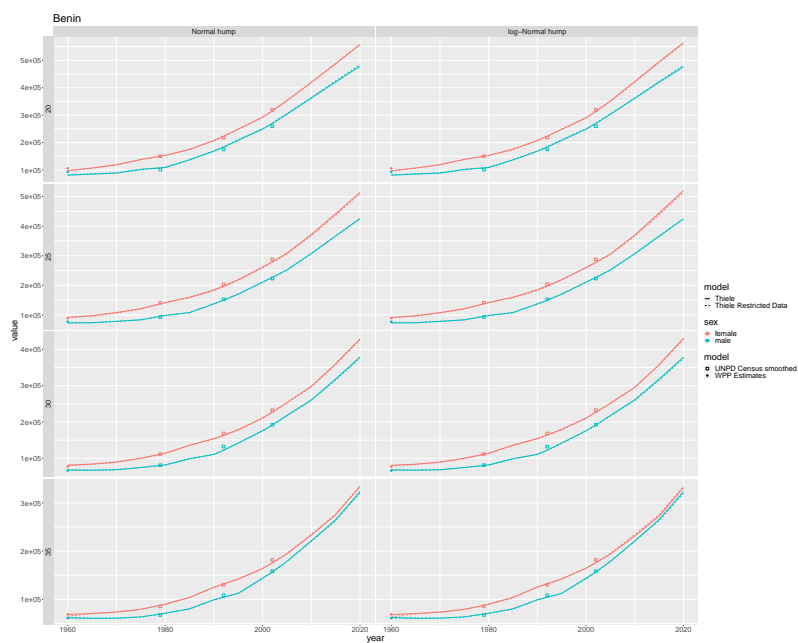Figure 14: Thiele Decomposed

Figure 15: Population
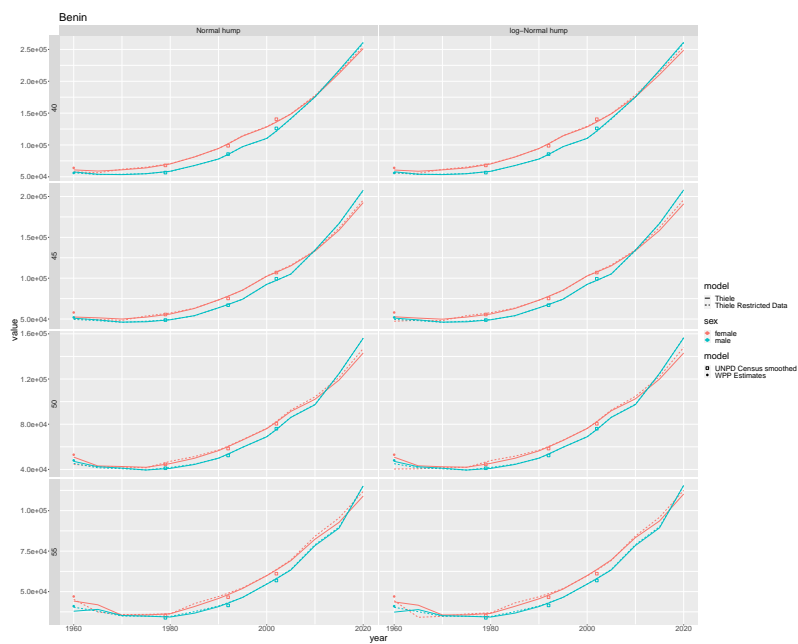

Figure 16: Population

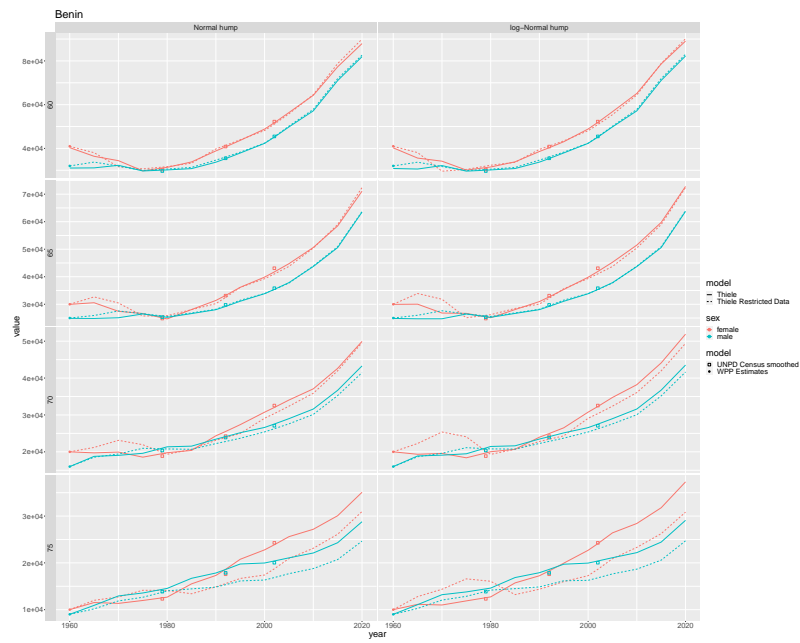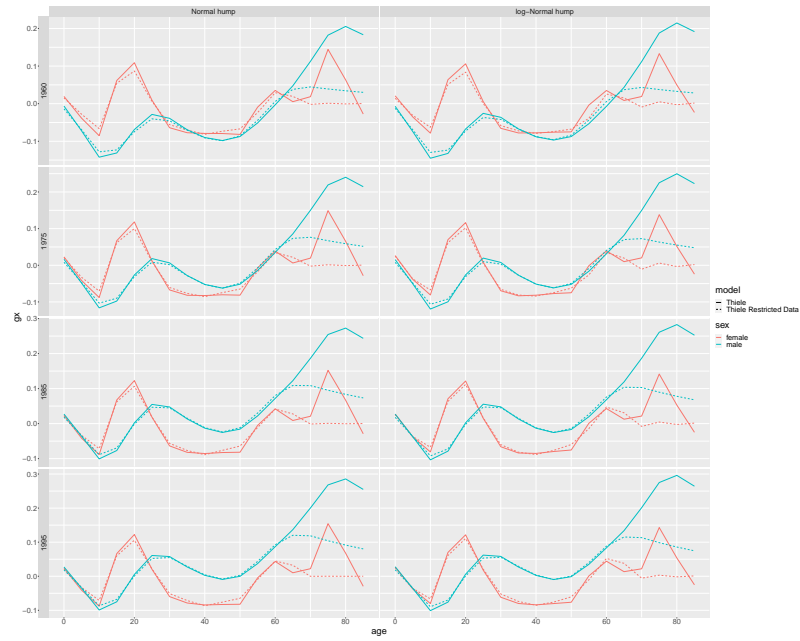Figure 17: Population

Figure 18: Population

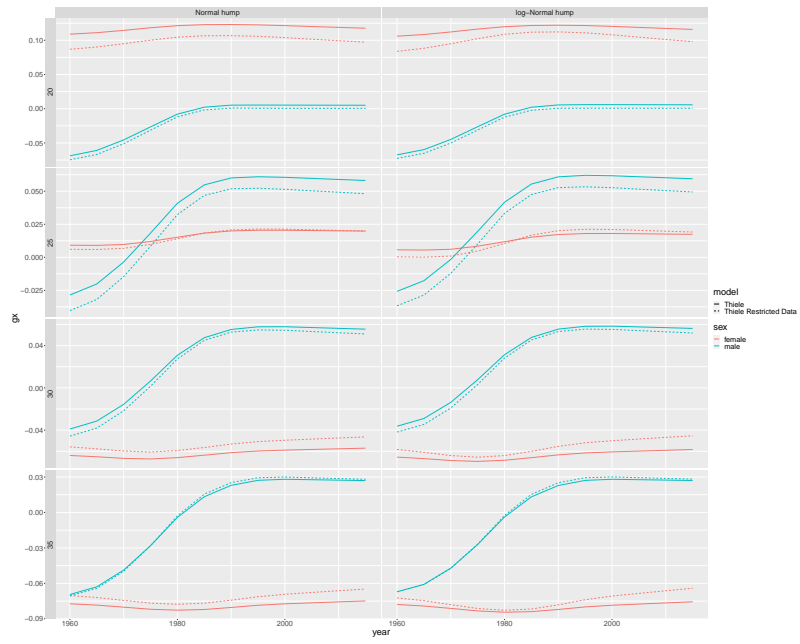Figure 19: Population
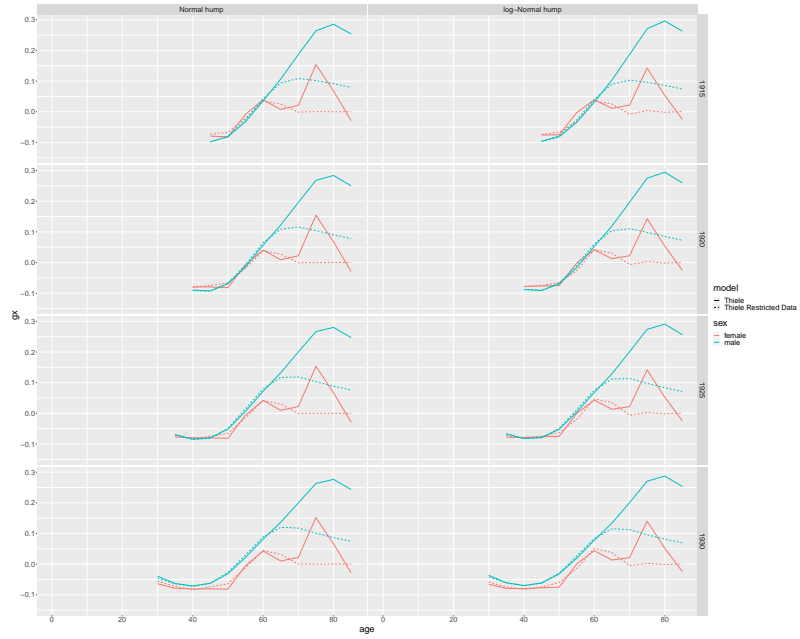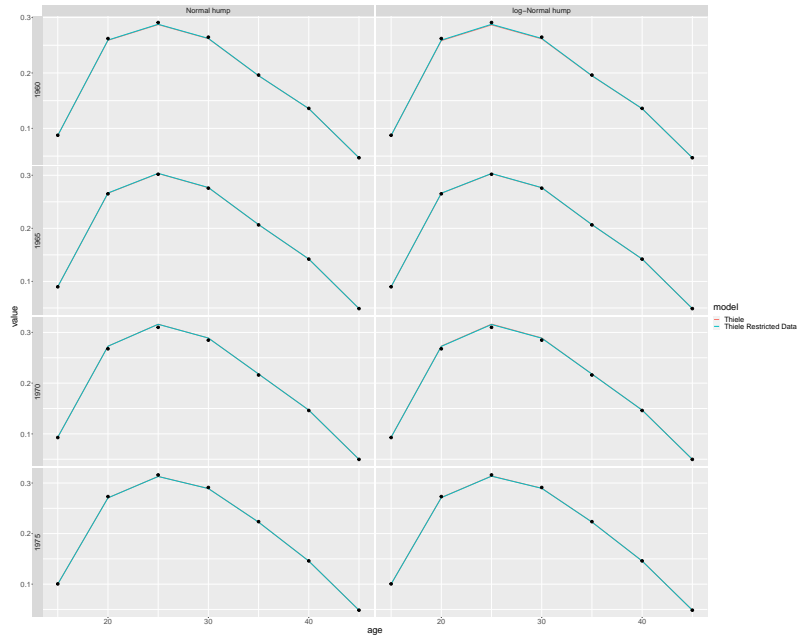

Figure 20: Migration

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Figure 21: Migration
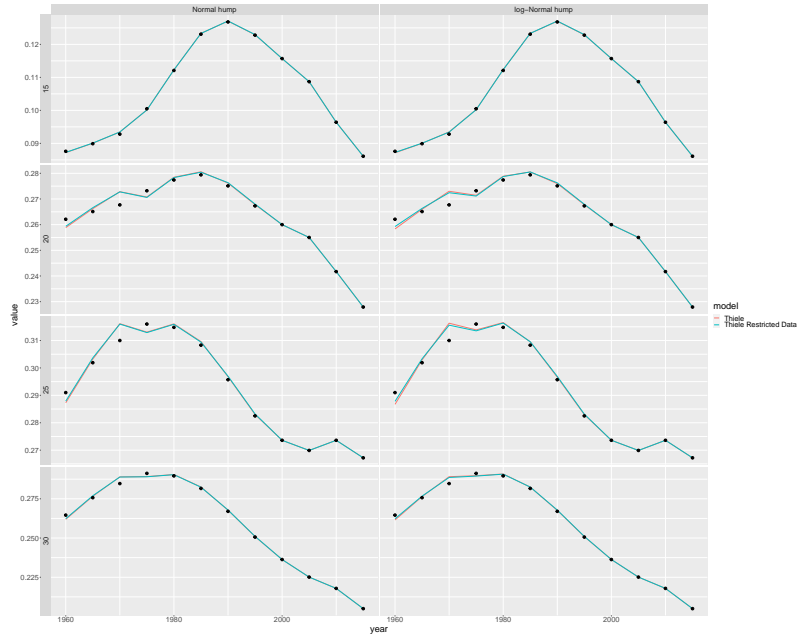

Figure 22: Migration

Figure 23: Fertility

Figure 24: Fertility