- Pulled in population data for Burkina Faso
  - Allowed a different hypervariance for the WPP baseline
  - Estimated child mortality and fertility rates oscillates around the initial estimates, possibly due to the previously mentioned under-count in young age groups
  - Excluded age group 0-4 from the likelihood, problem still persists
  - Excluded the first two age groups (0-4, 5-9) and it is fine
  - Estimated correlation in migration proportions across time is negative ☹
- Also tried to fit it to Benin and Uganda, using WPP fertility estimates as priors
  - For Benin (also possibly in some other countries), in one of the census year there is only de-jure counts, where the remaining three are all de-facto. I have assumed the differences are negligible at the moment
  - For Senegal in the earliest census the open age group starts at 65+, while in the later censuses there is data at older age groups

LogQuad

```
##    user  system elapsed
##    3.28    0.04    3.33
```

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

Thiele

```
##    user  system elapsed
##   19.92    0.34   20.36
```

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

Thiele MVN

```
##    user  system elapsed
##   14.98    0.20   15.31
```

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

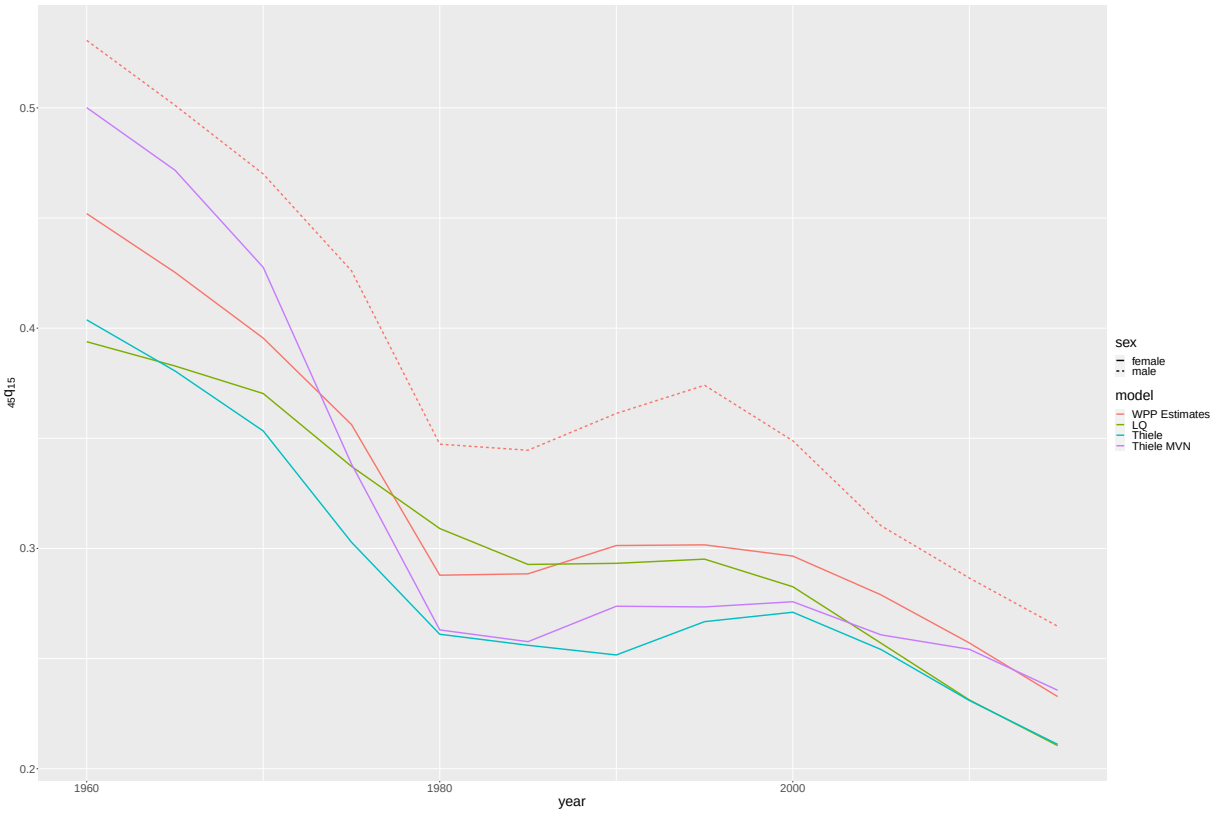

Figure 1: Estimated Adult Mortality

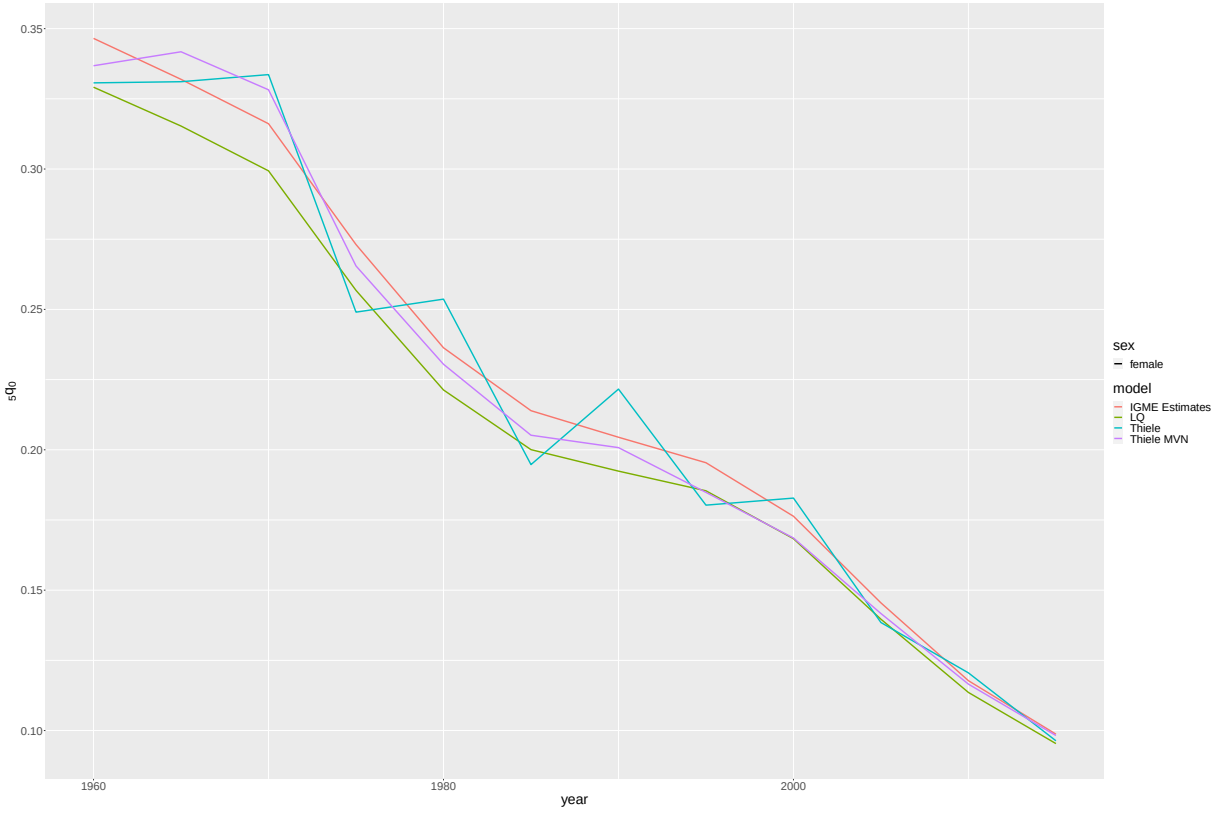

Figure 2: Estimated Child Mortality

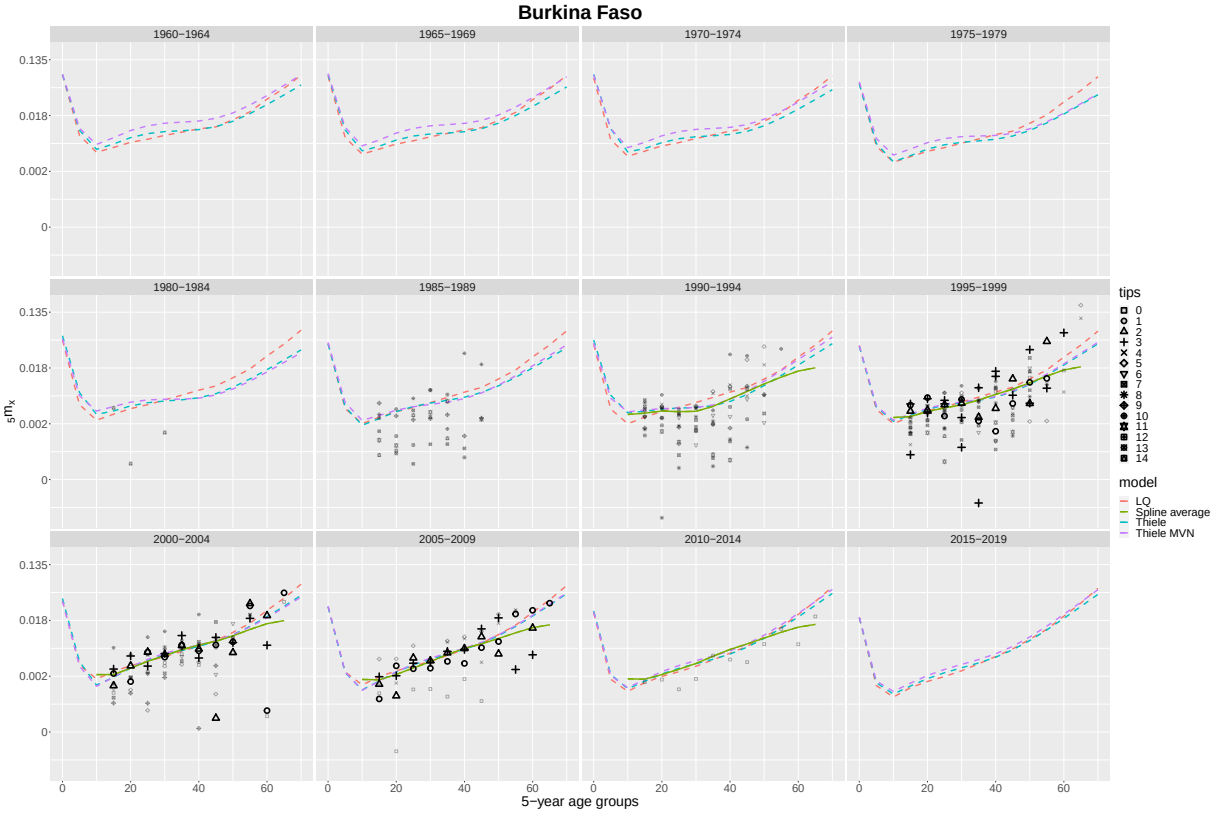

Figure 3: Estimated Mortality Schedules

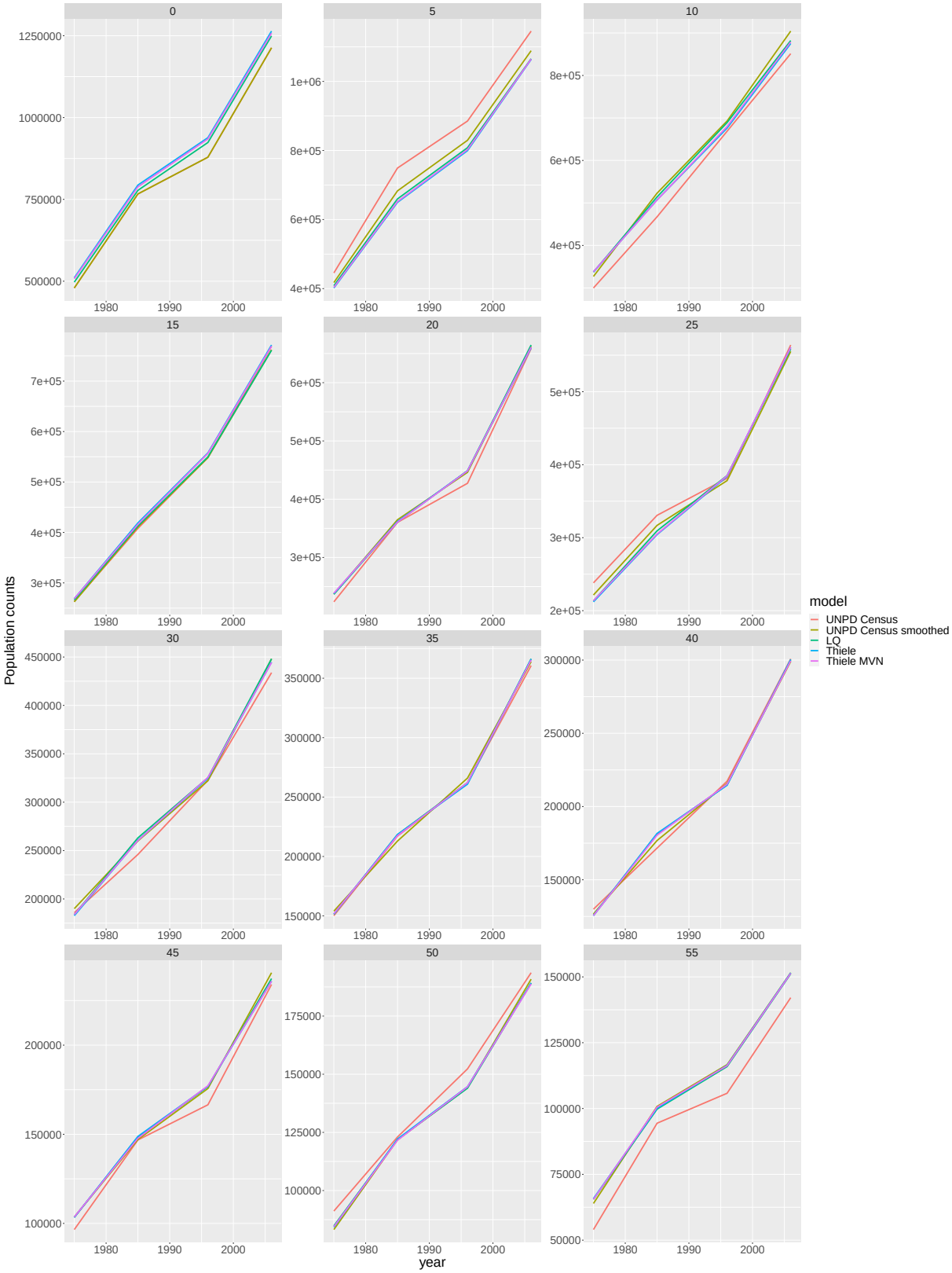

Figure 4: Estimated Population Counts

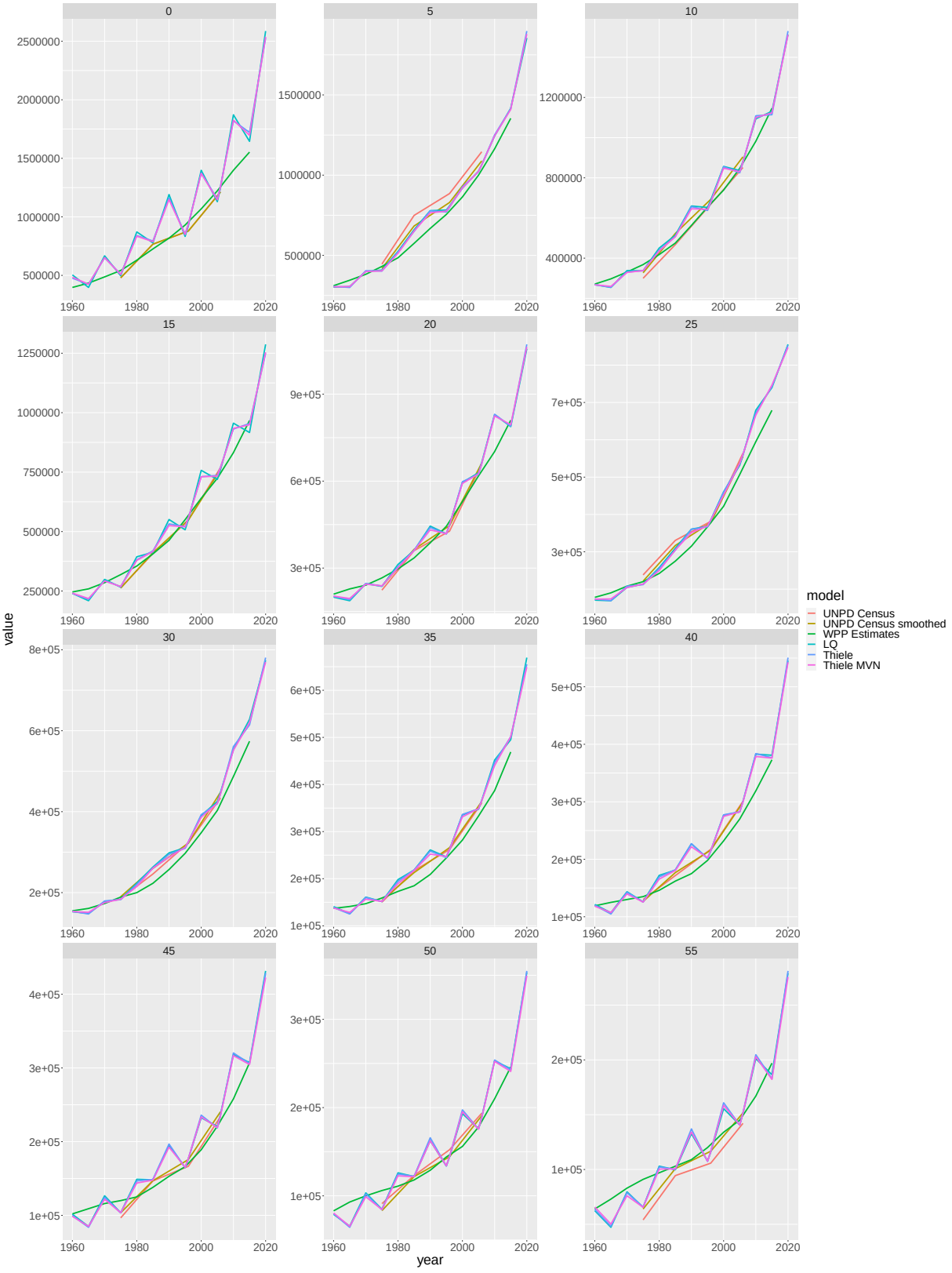

Figure 5: Estimated Population Counts

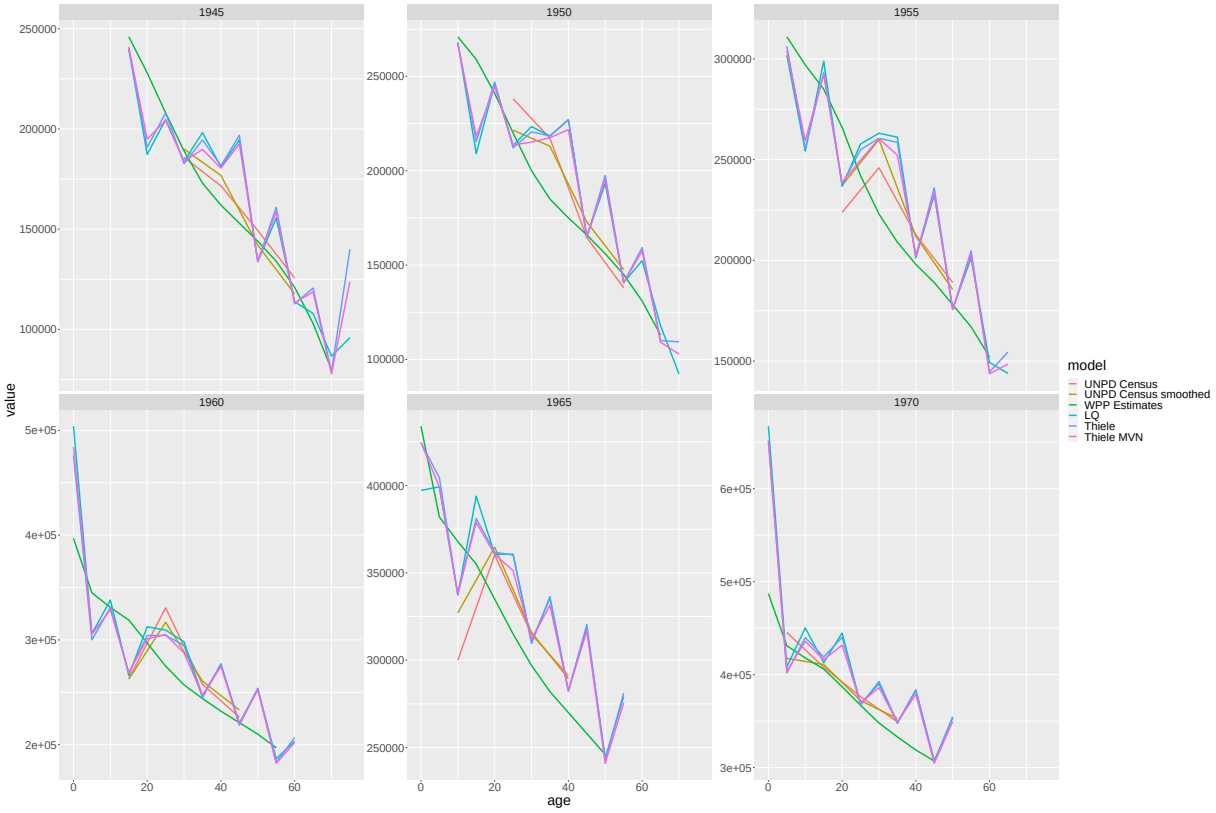

Figure 6: Estimated Population Counts (Cohorts)

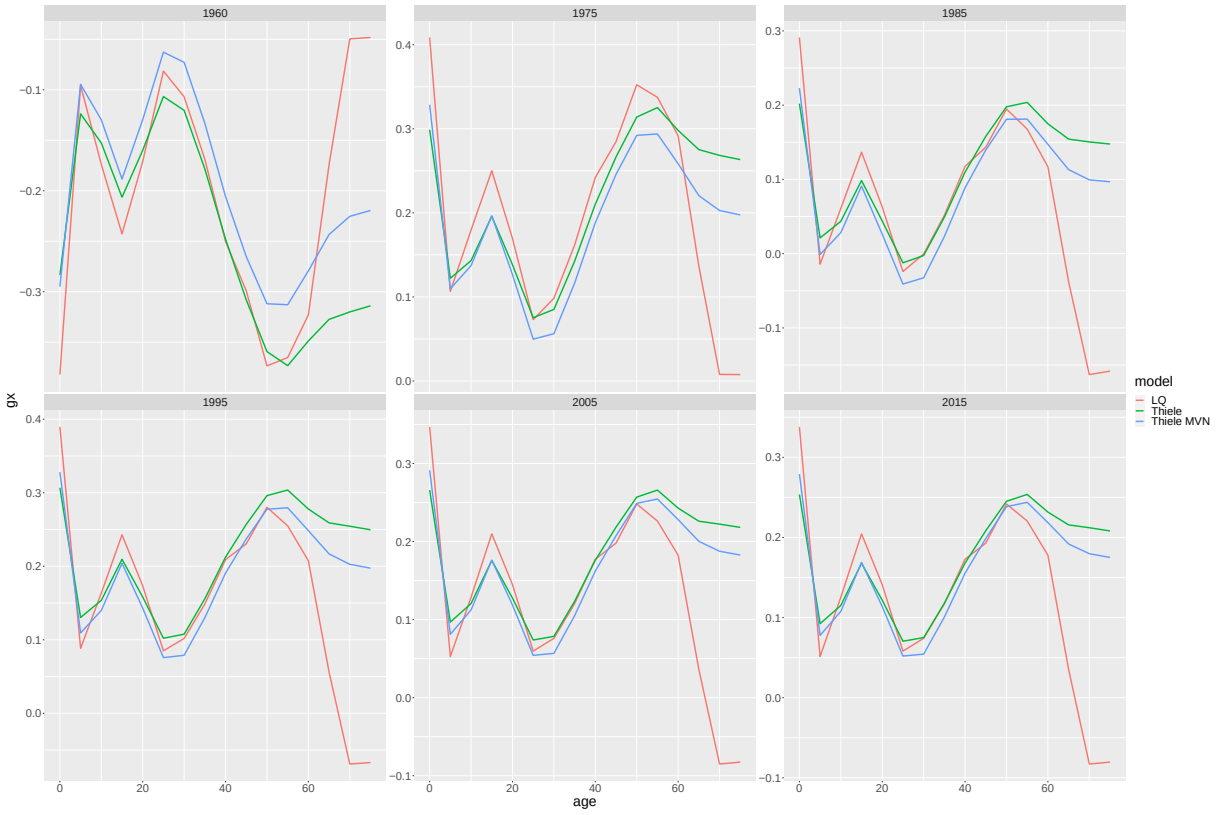

Figure 7: Estimated Migration Proportions

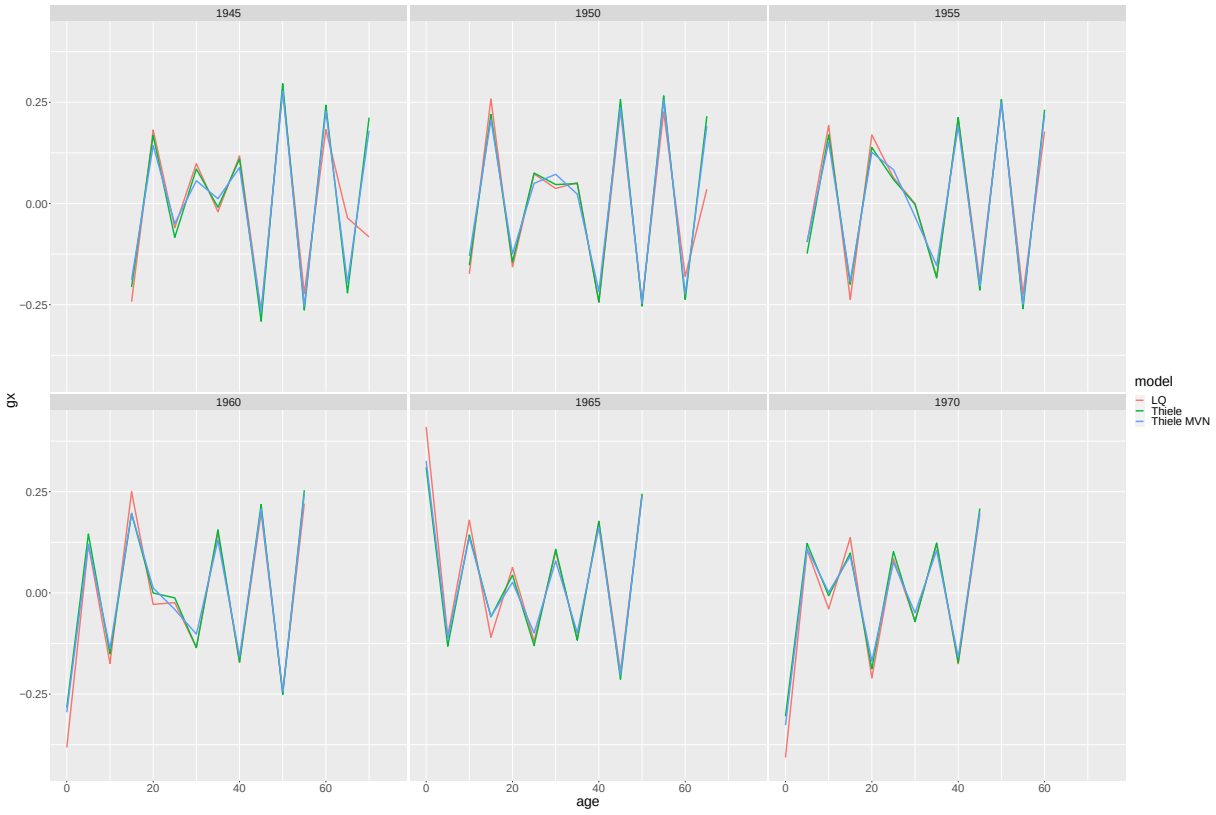

Figure 8: Estimated Migration Proportions

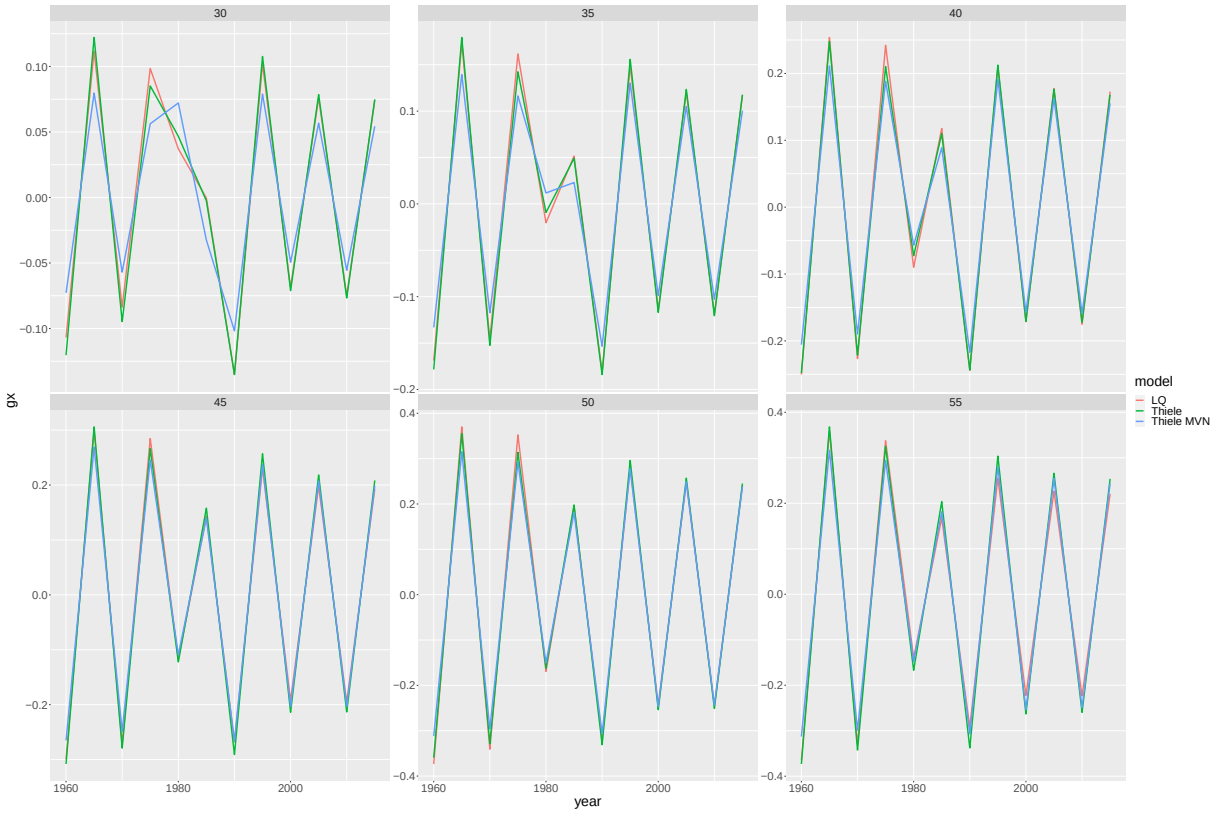

Figure 9: Estimated Migration Proportions

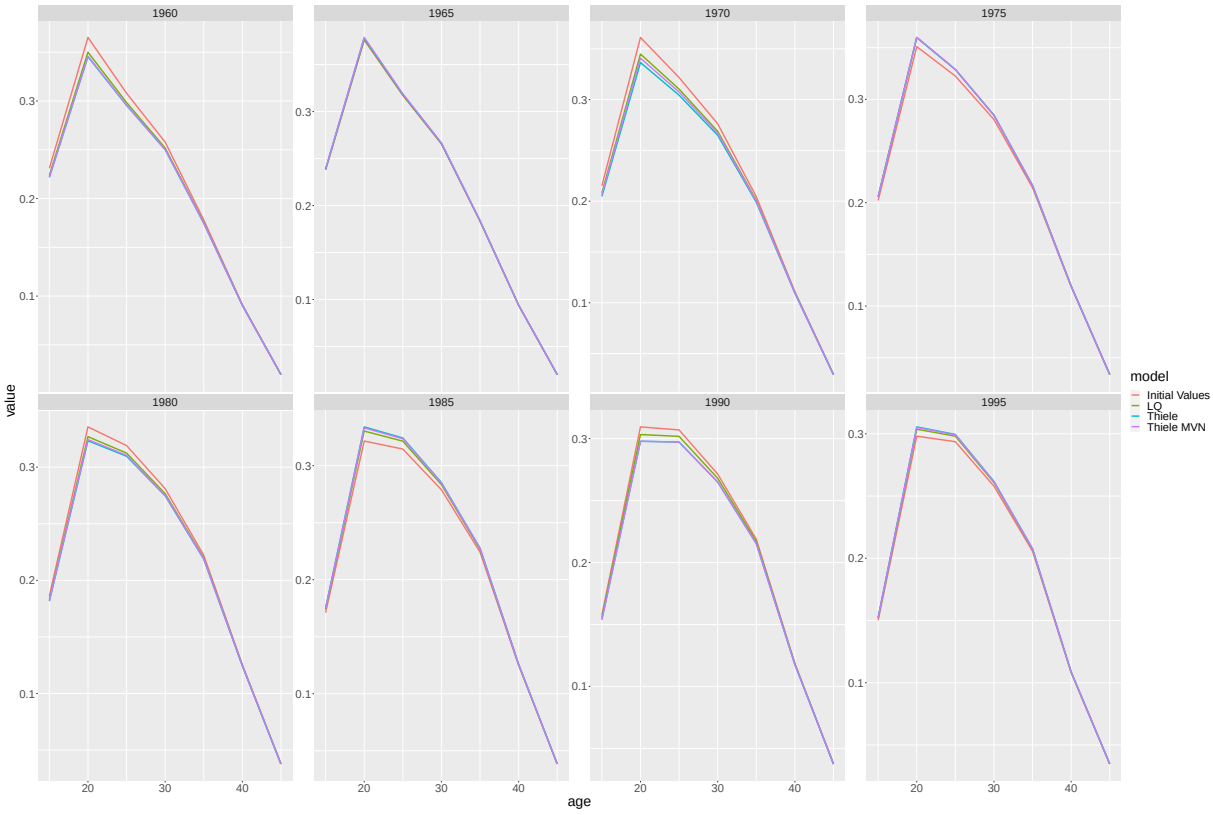

Figure 10: Estimated Migration Proportions

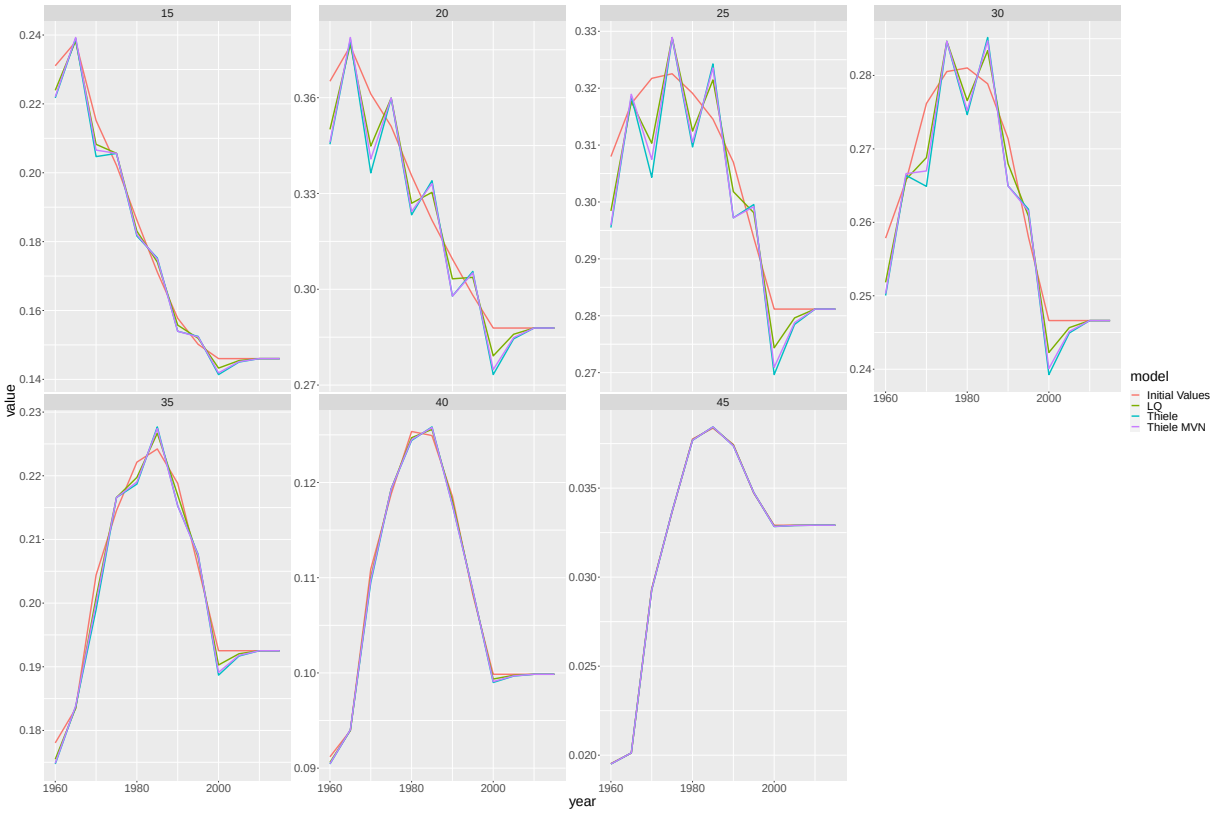

Figure 11: Estimated Migration Proportions

LogQuad

```
##    user  system elapsed
##    2.95    0.11    3.06
```

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

Thiele

```
##    user  system elapsed
##   33.22    0.16   33.43
```

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

Thiele MVN

```
##    user  system elapsed
##   27.52    0.33   27.88
```

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

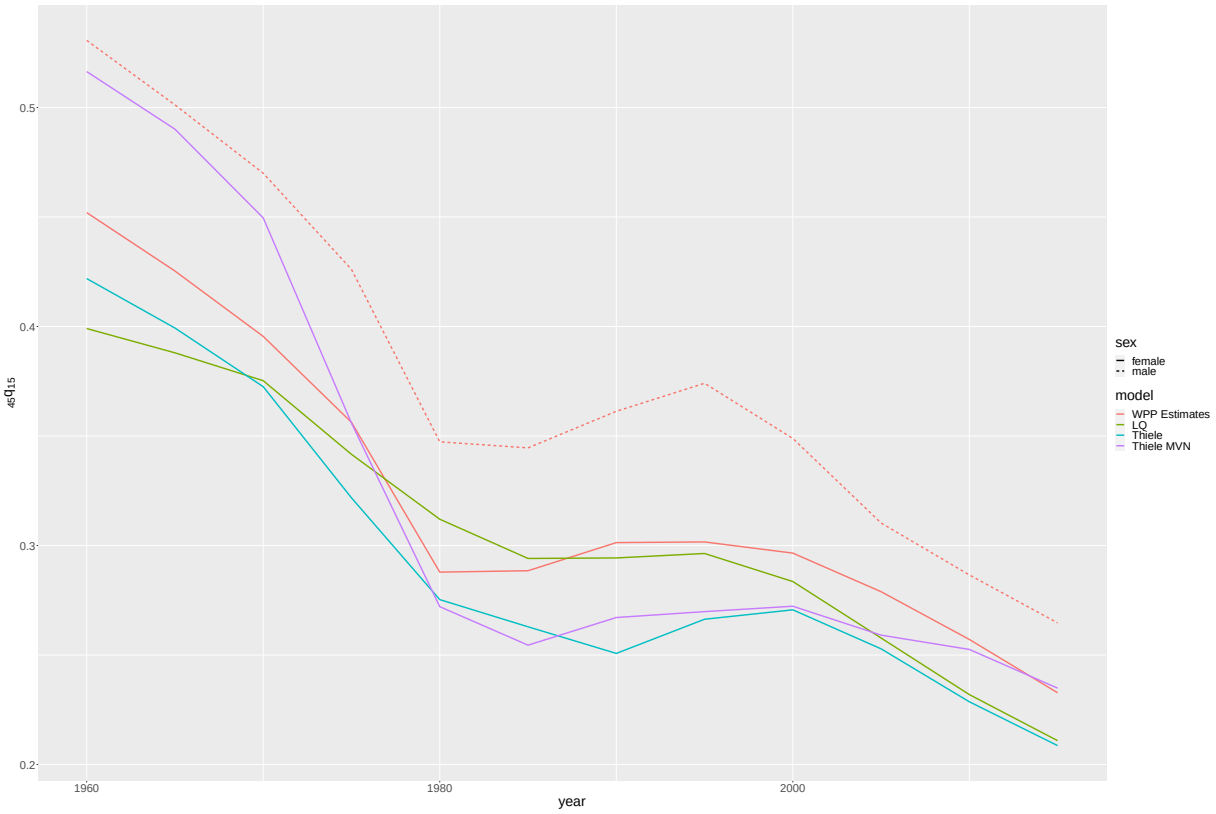

Figure 1: Estimated Adult Mortality

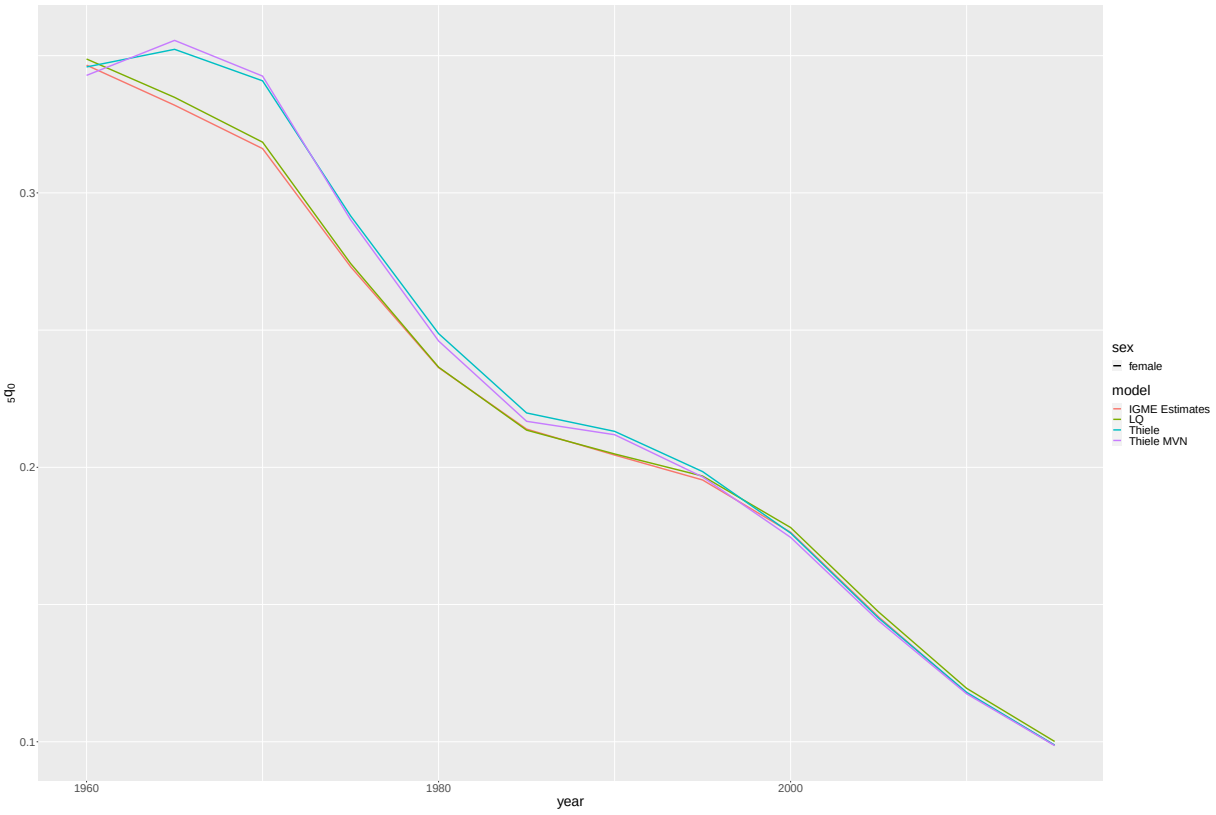

Figure 2: Estimated Child Mortality

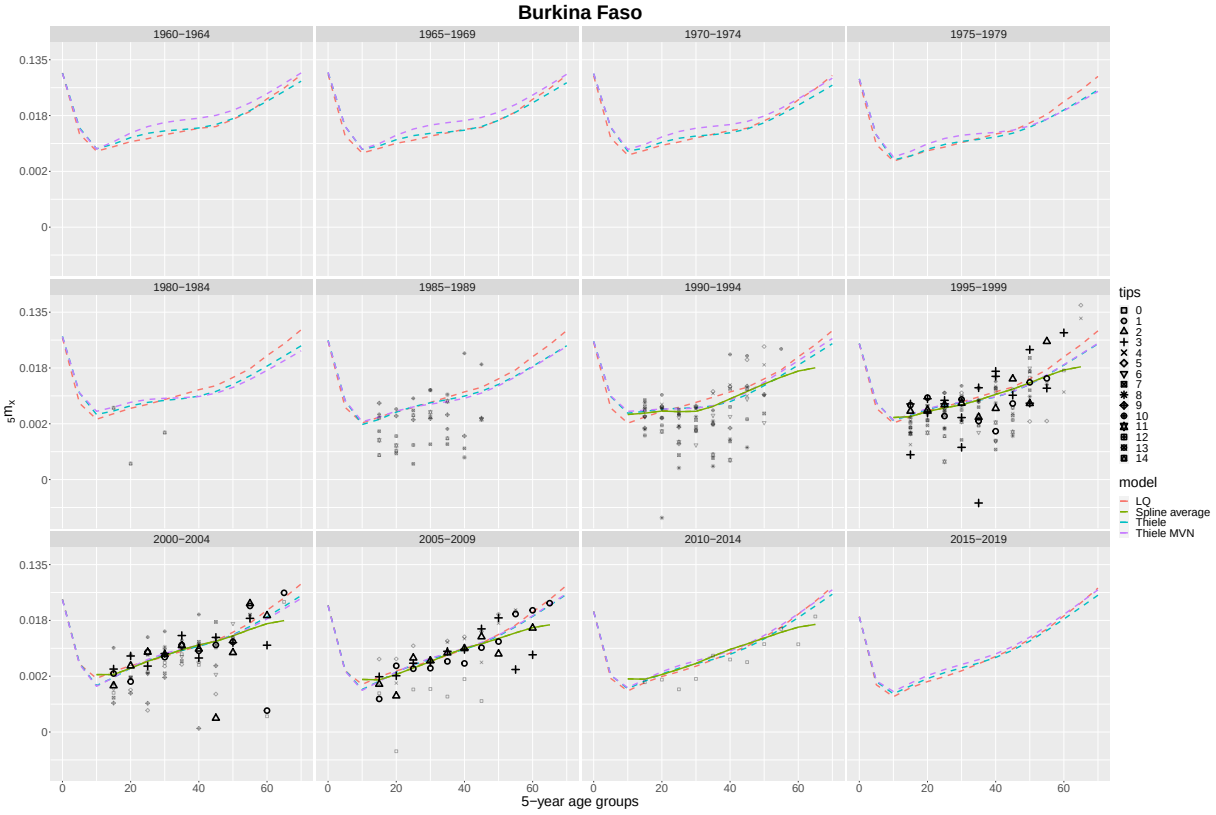

Figure 3: Estimated Mortality Schedules

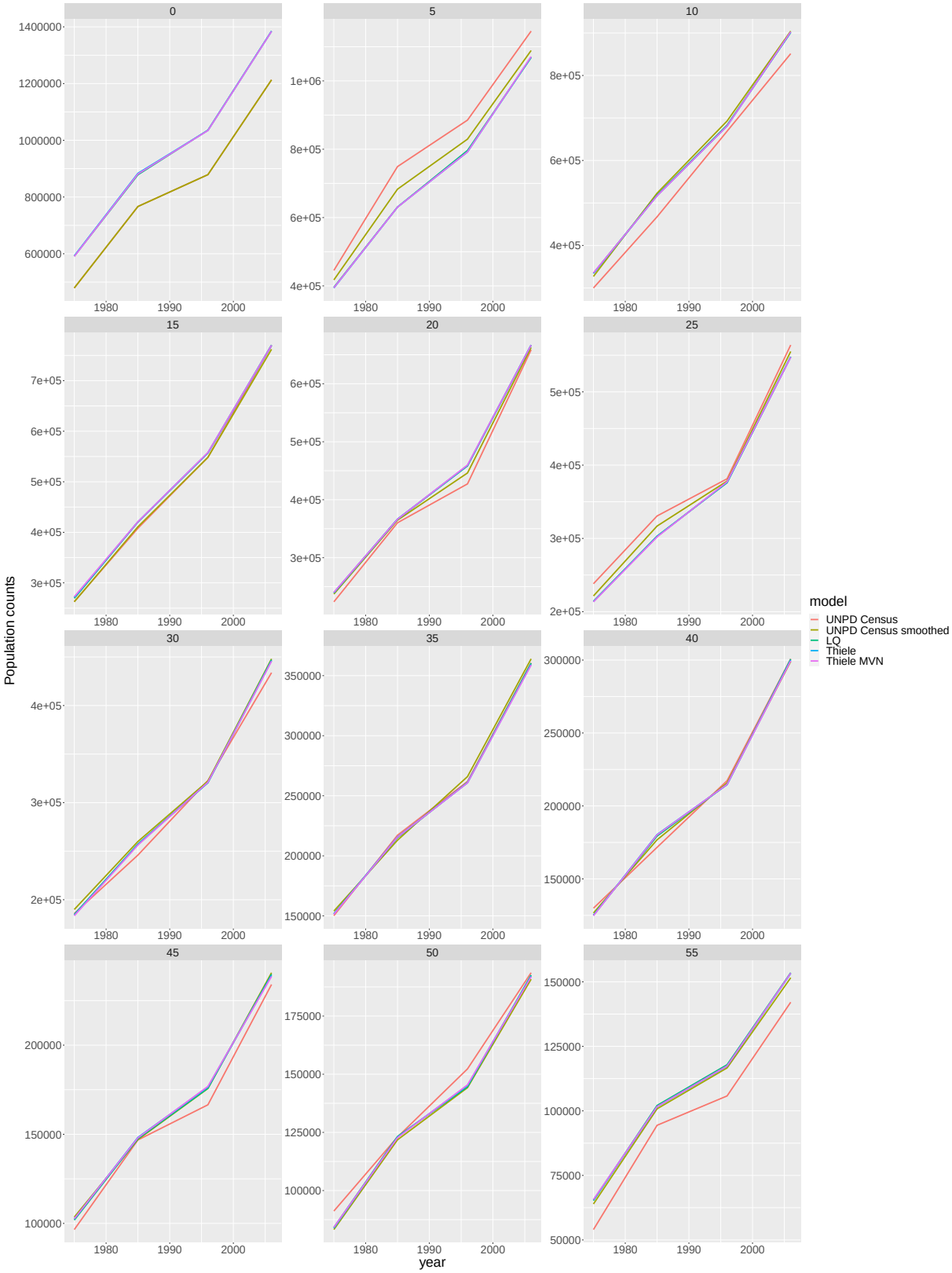

Figure 4: Estimated Population Counts

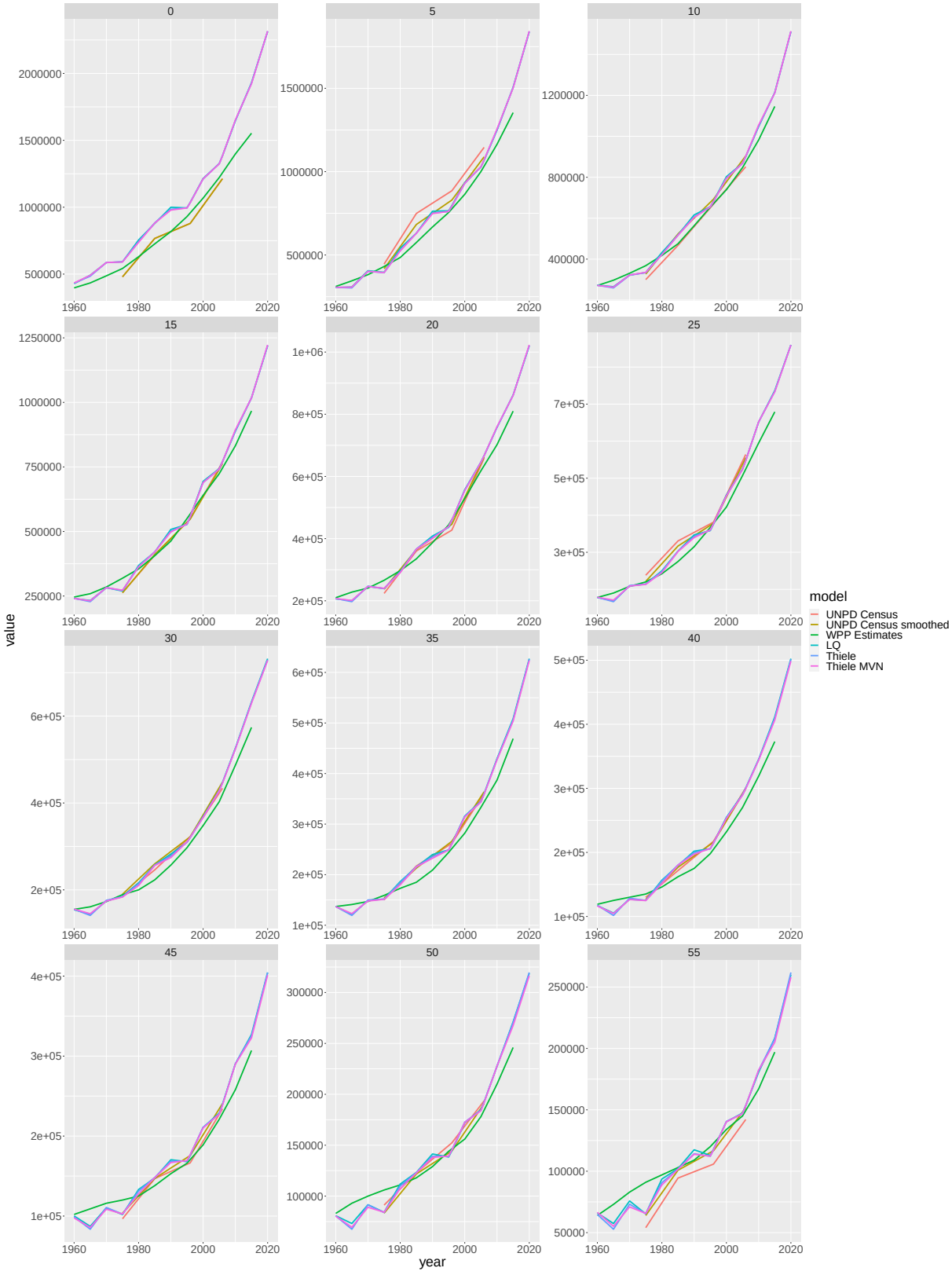

Figure 5: Estimated Population Counts

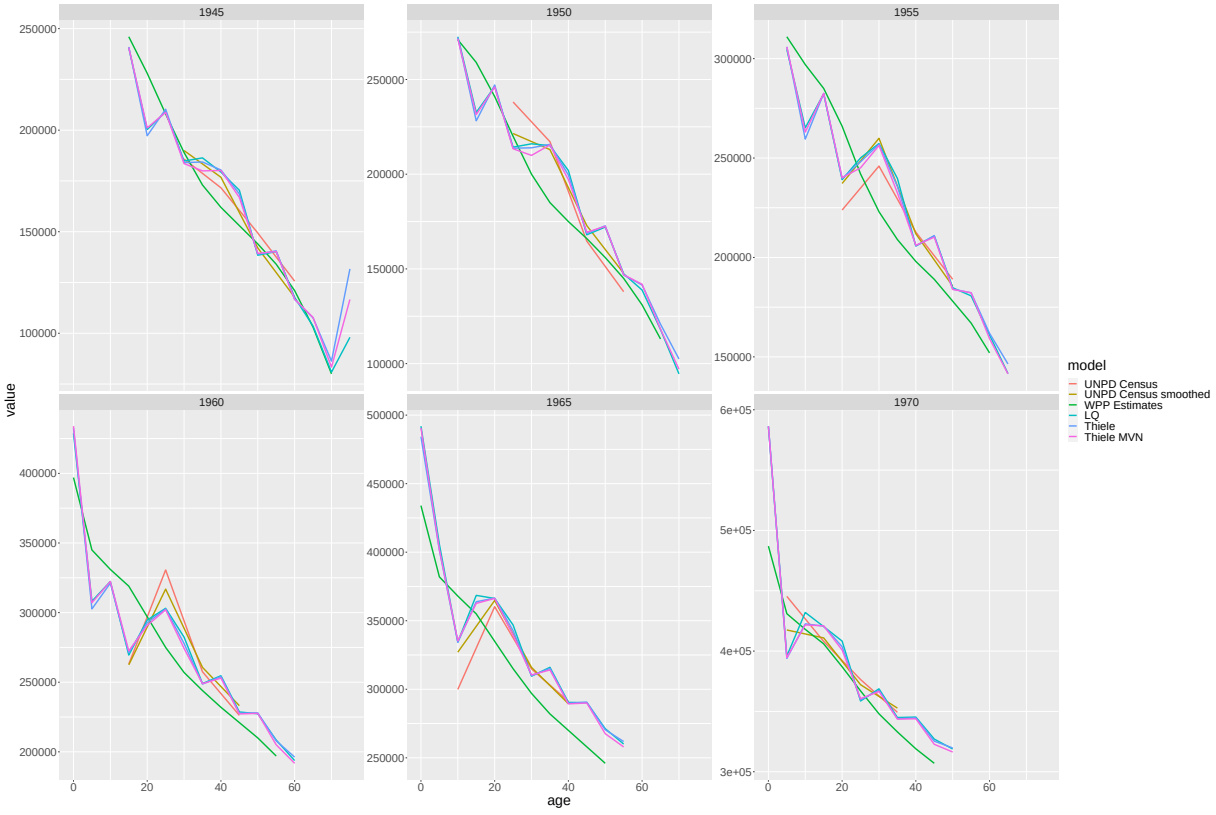

Figure 6: Estimated Population Counts (Cohorts)

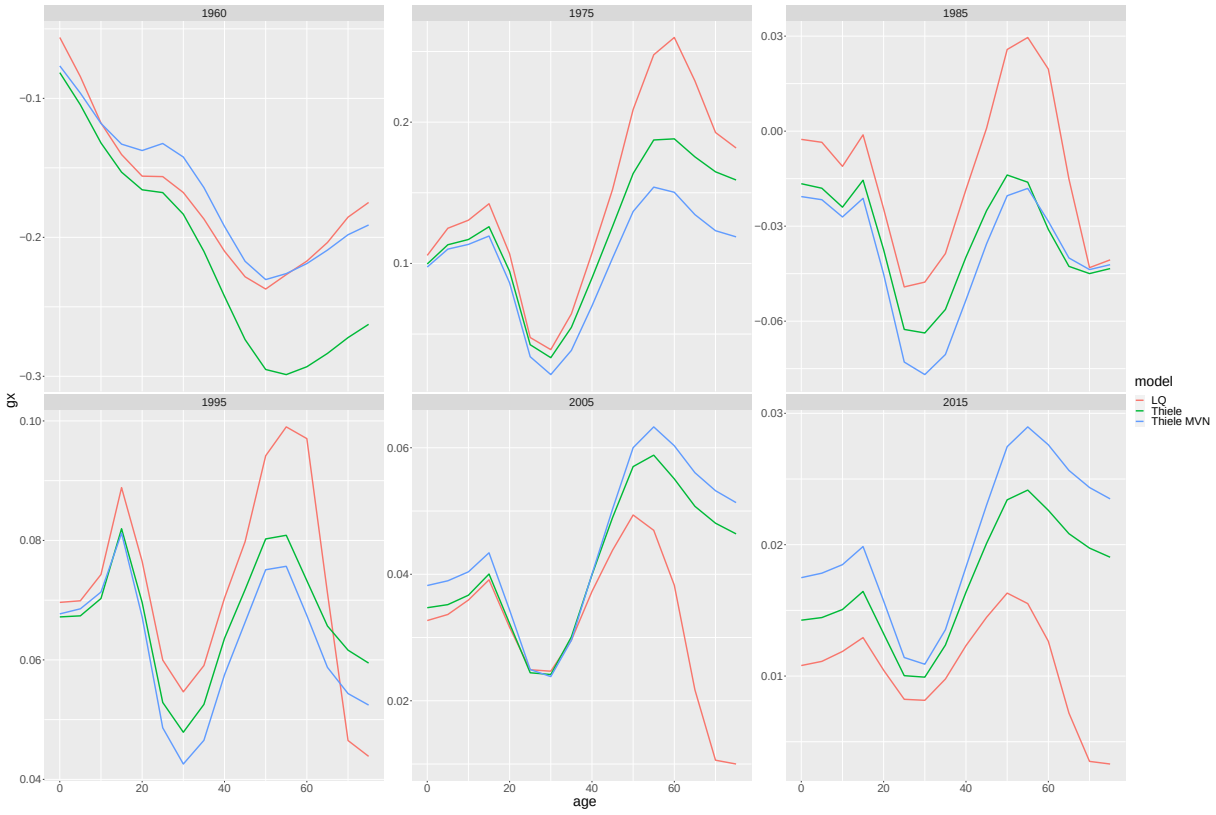

Figure 7: Estimated Migration Proportions

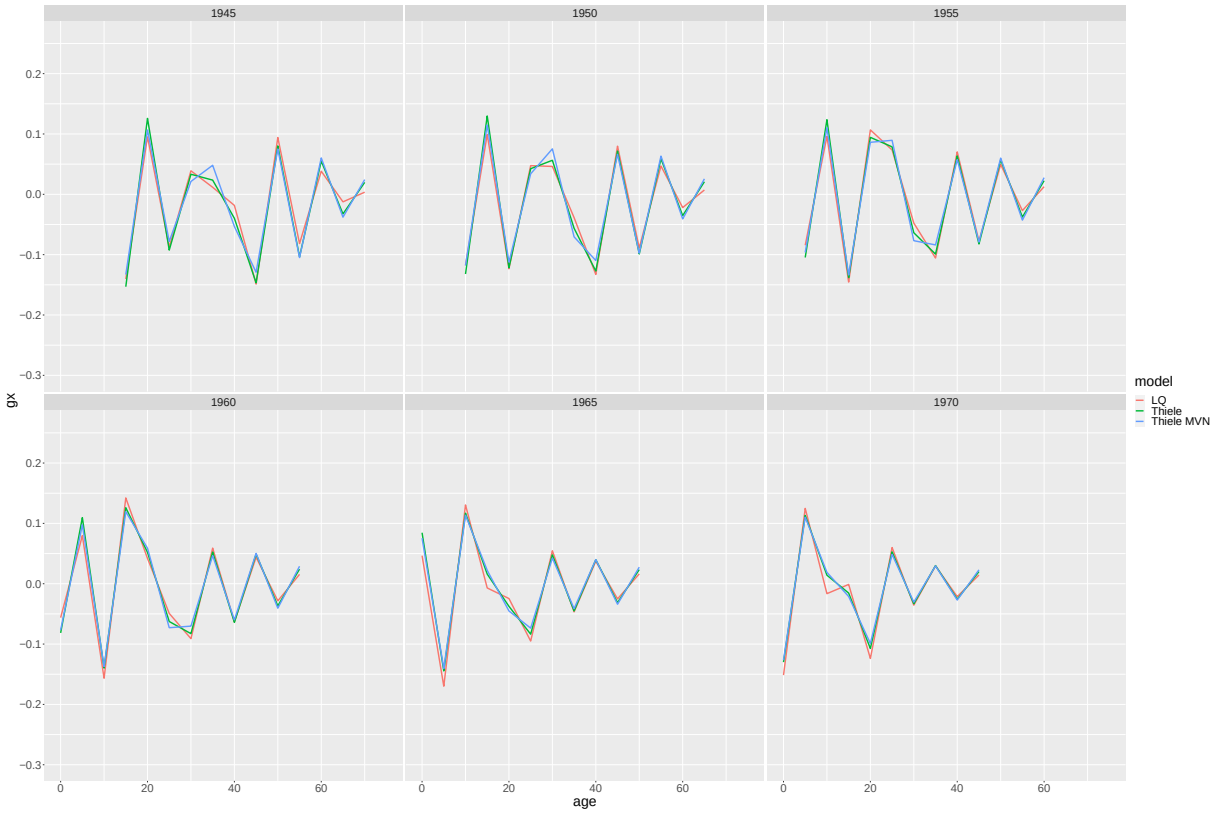

Figure 8: Estimated Migration Proportions

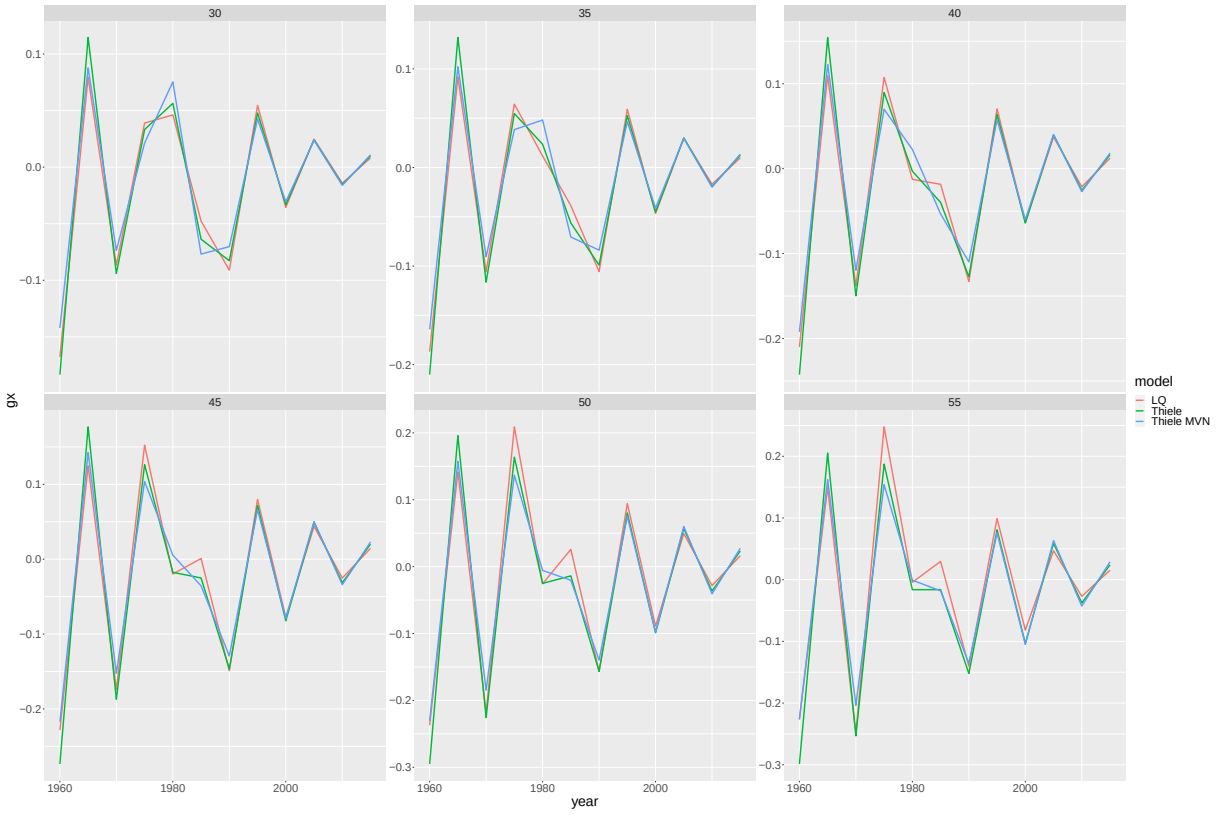

Figure 9: Estimated Migration Proportions

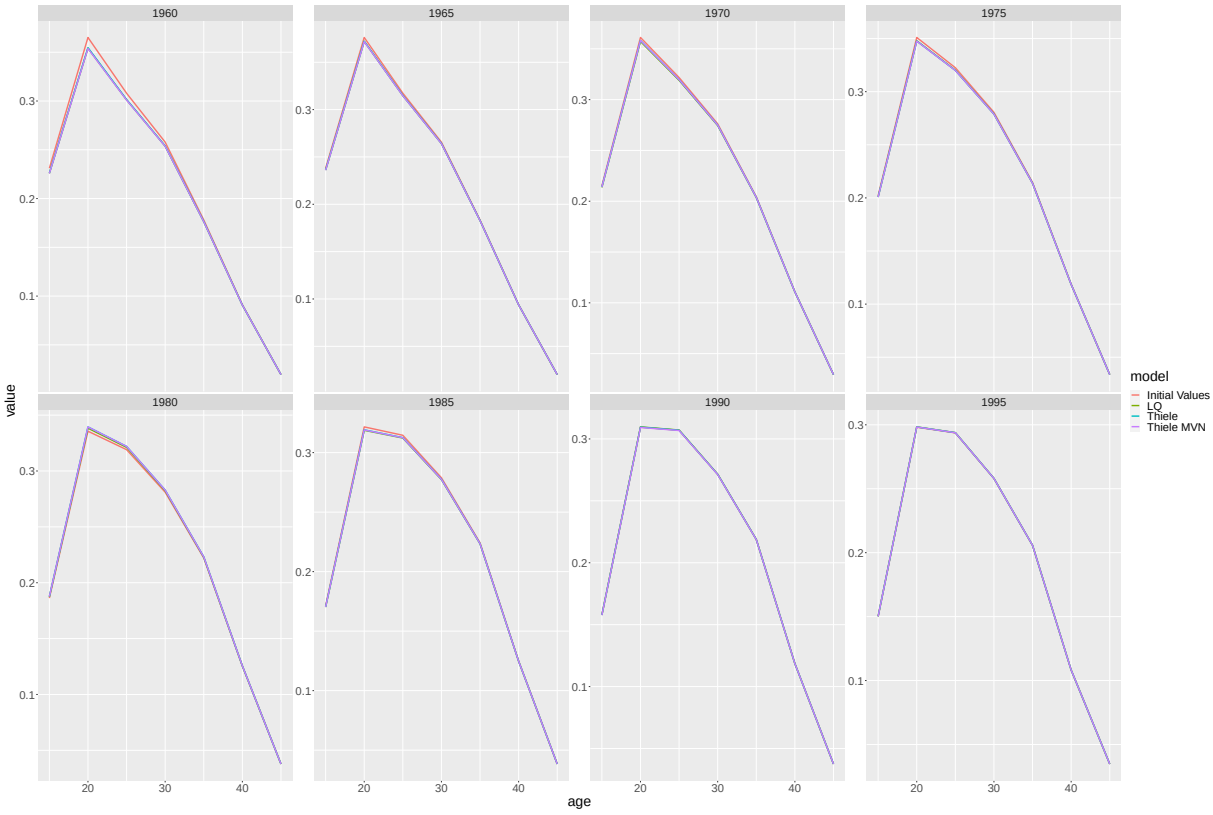

Figure 10: Estimated Migration Proportions

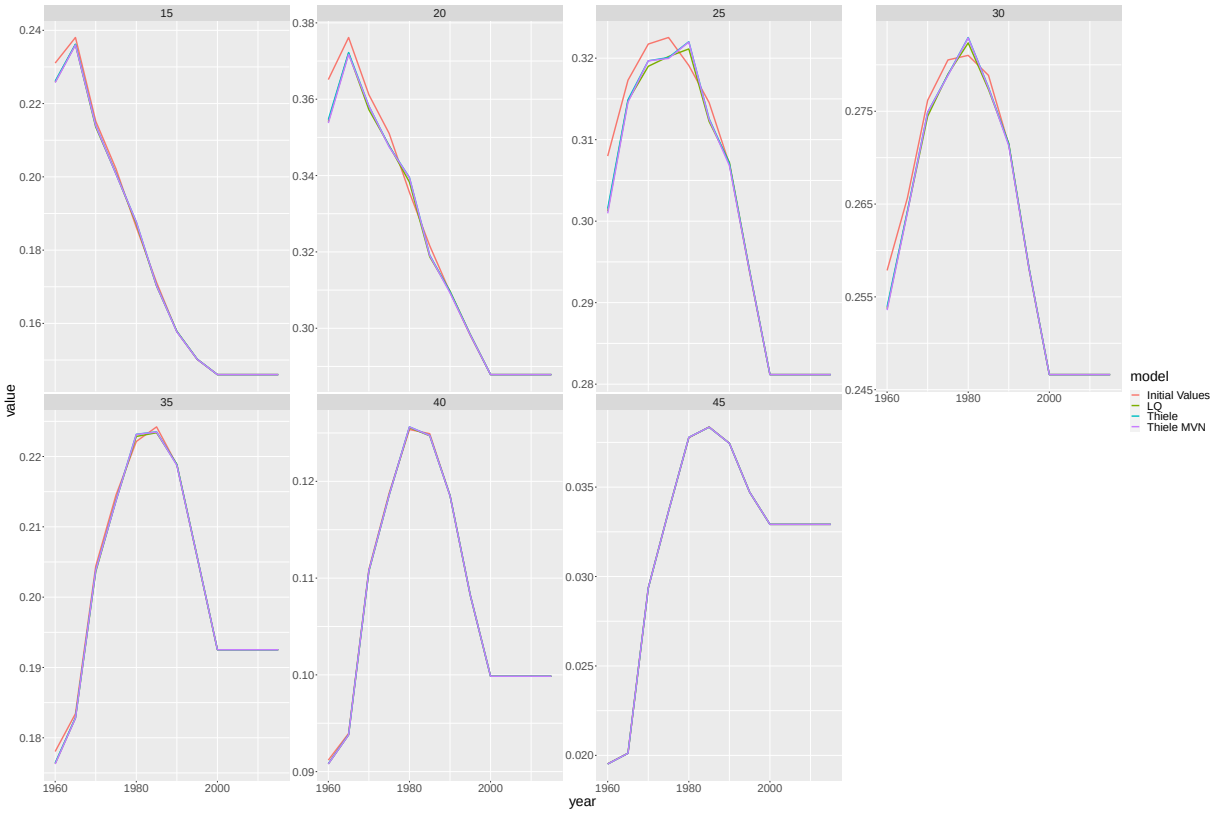

Figure 11: Estimated Migration Proportions

LogQuad

```
##    user  system elapsed
##    3.67    0.08    3.77
```

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

Thiele

```
##    user  system elapsed
##   20.65    0.41   21.05
```

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

Thiele MVN

```
##    user  system elapsed
##   13.30    0.25   13.53
```

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

Thiele no DHS

```
##    user  system elapsed
##    7.47    0.25    7.75
```

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

Thiele fix rho_gt=0

```
##    user  system elapsed
##   21.33    0.25   21.70
```

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

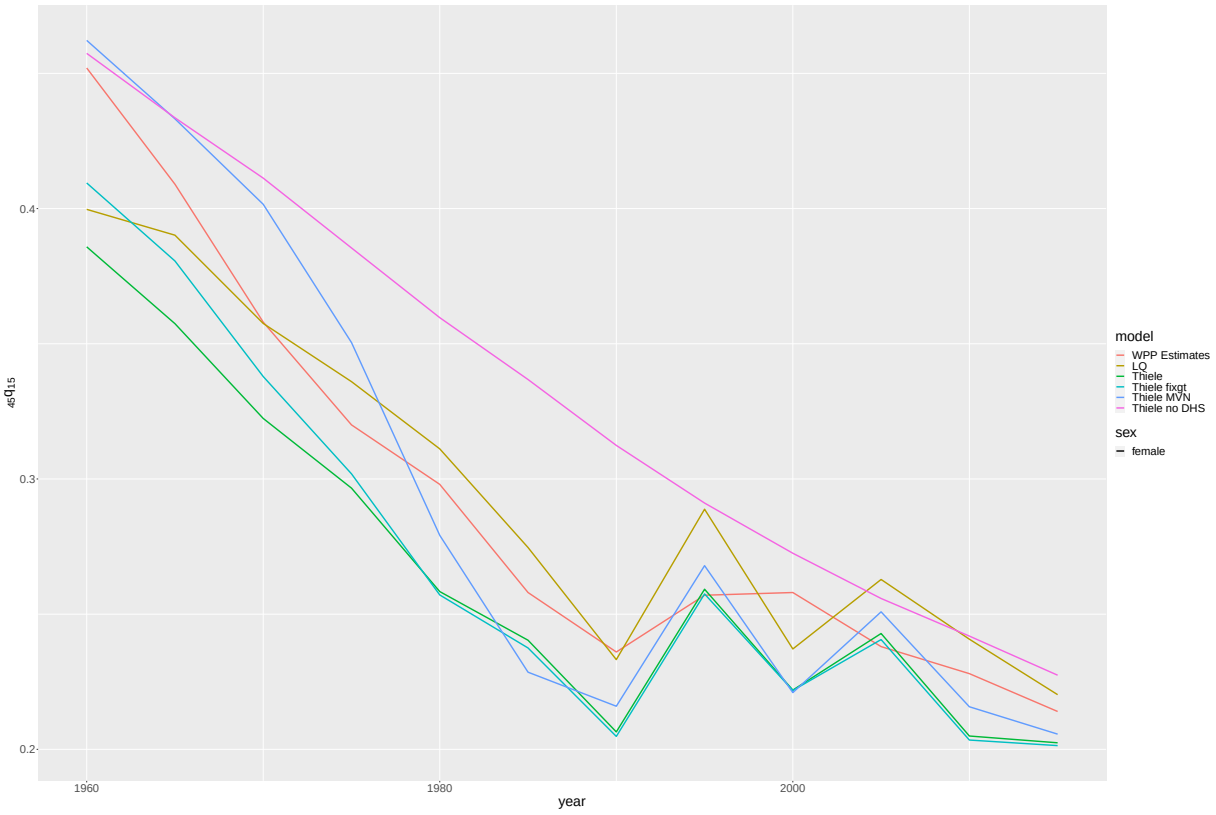

Figure 1: Estimated Adult Mortality

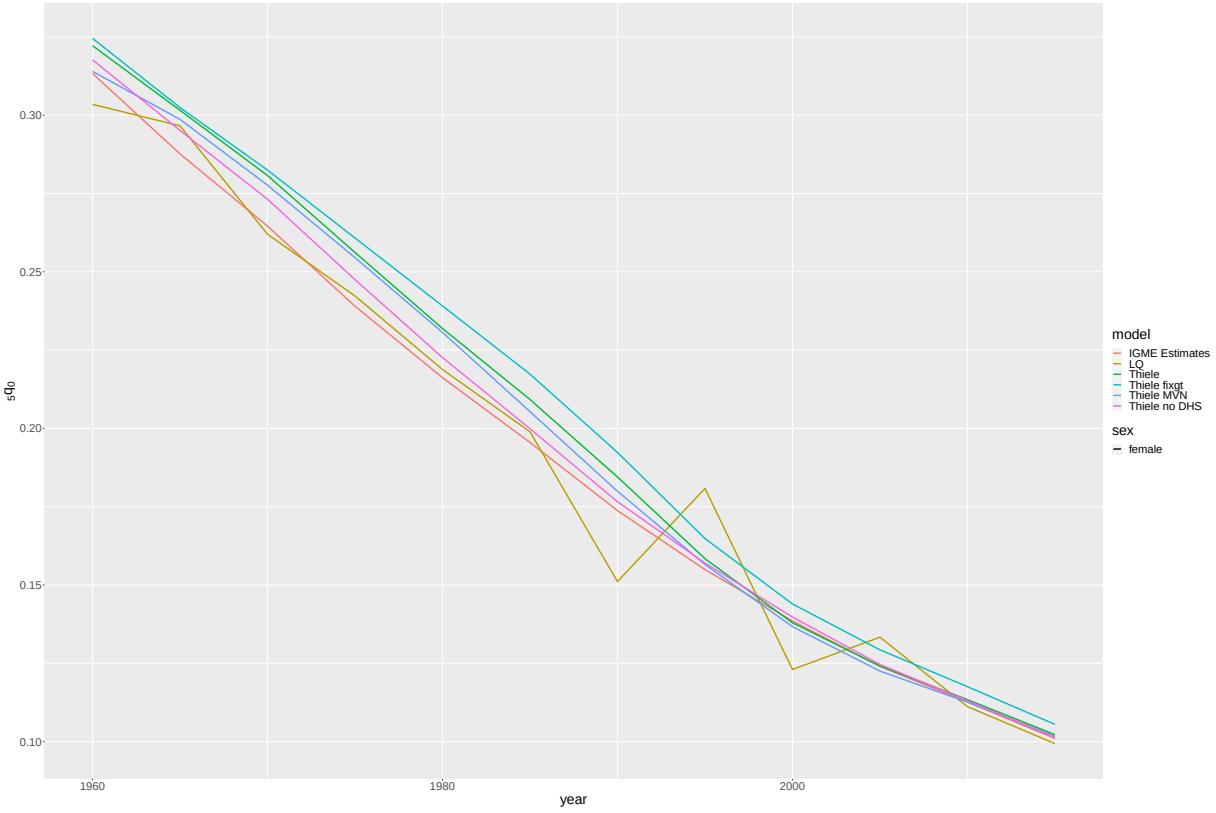

Figure 2: Estimated Child Mortality

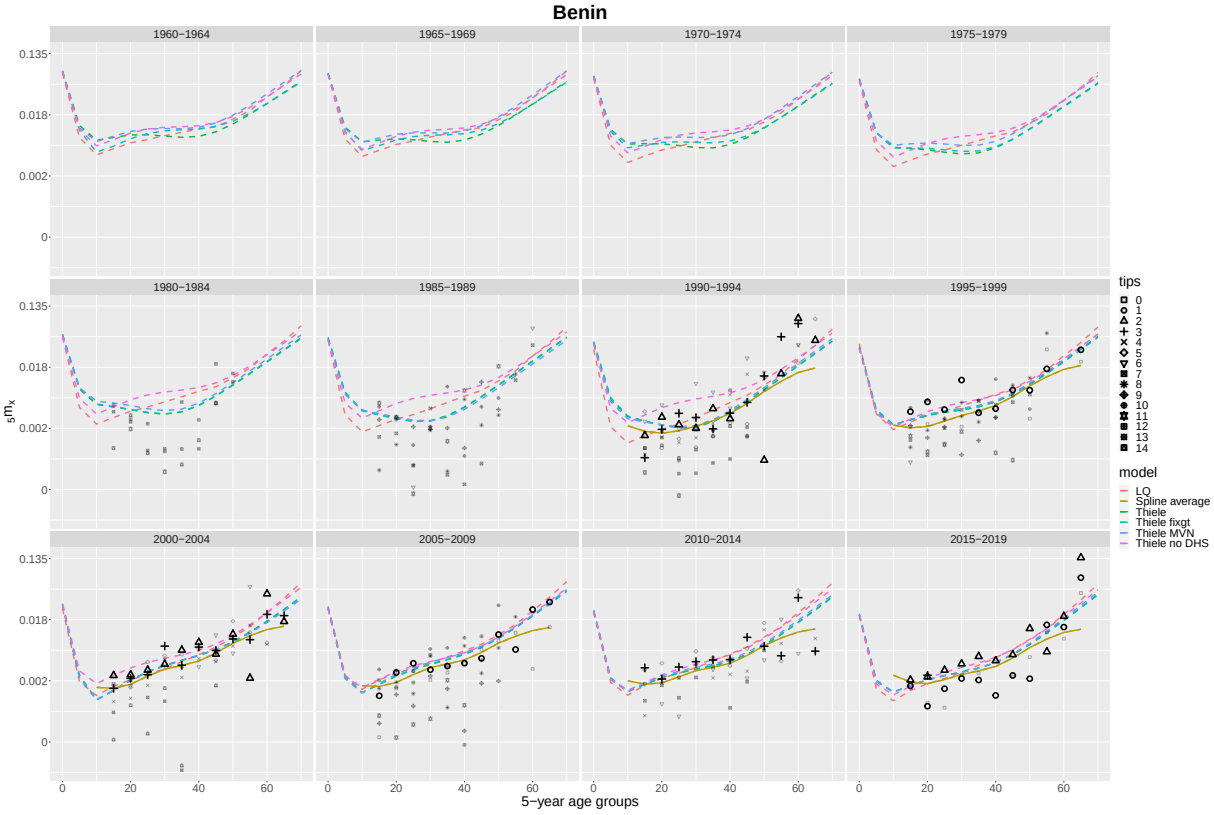

Figure 3: Estimated Mortality Schedules

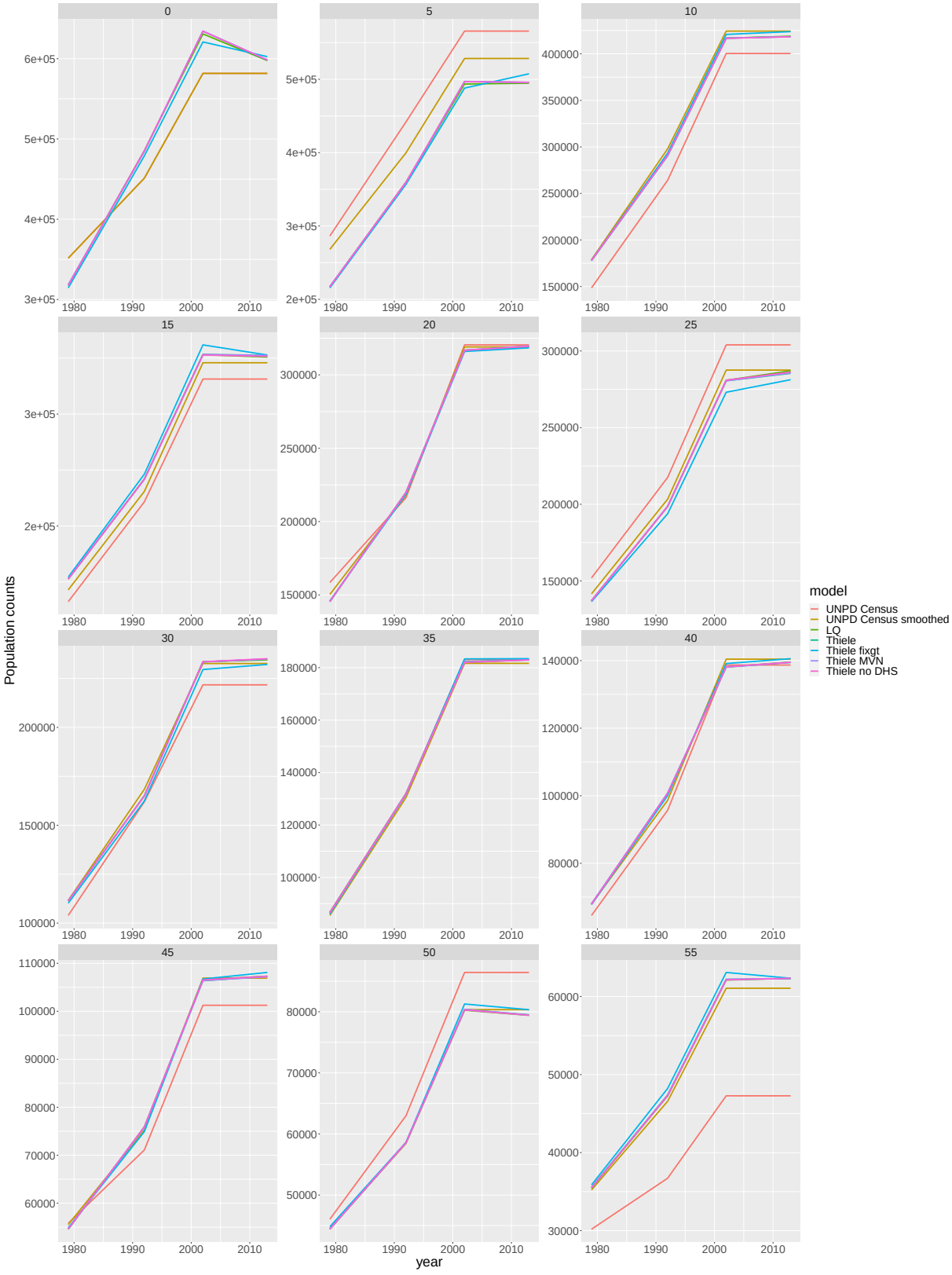

Figure 4: Estimated Population Counts

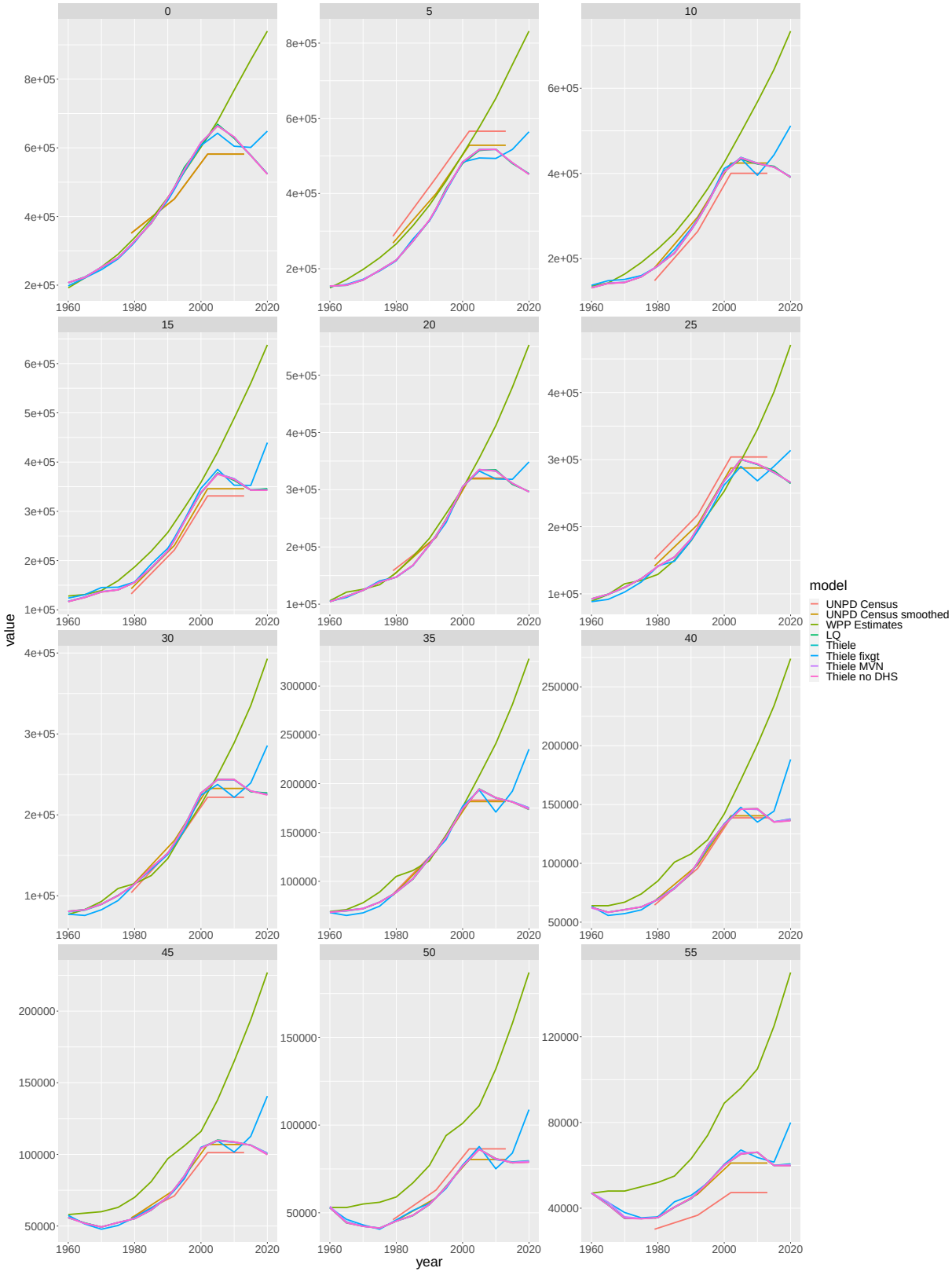

Figure 5: Estimated Population Counts

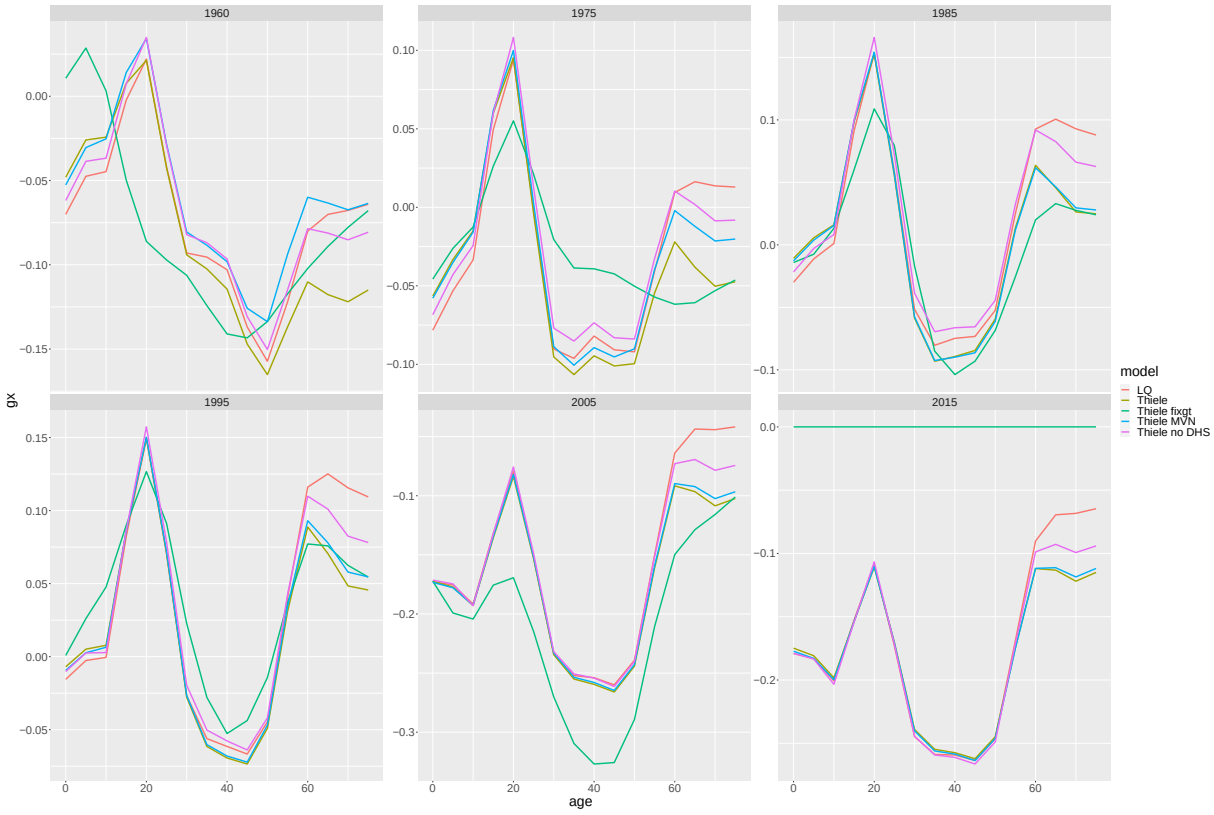

Figure 6: Estimated Migration Proportions

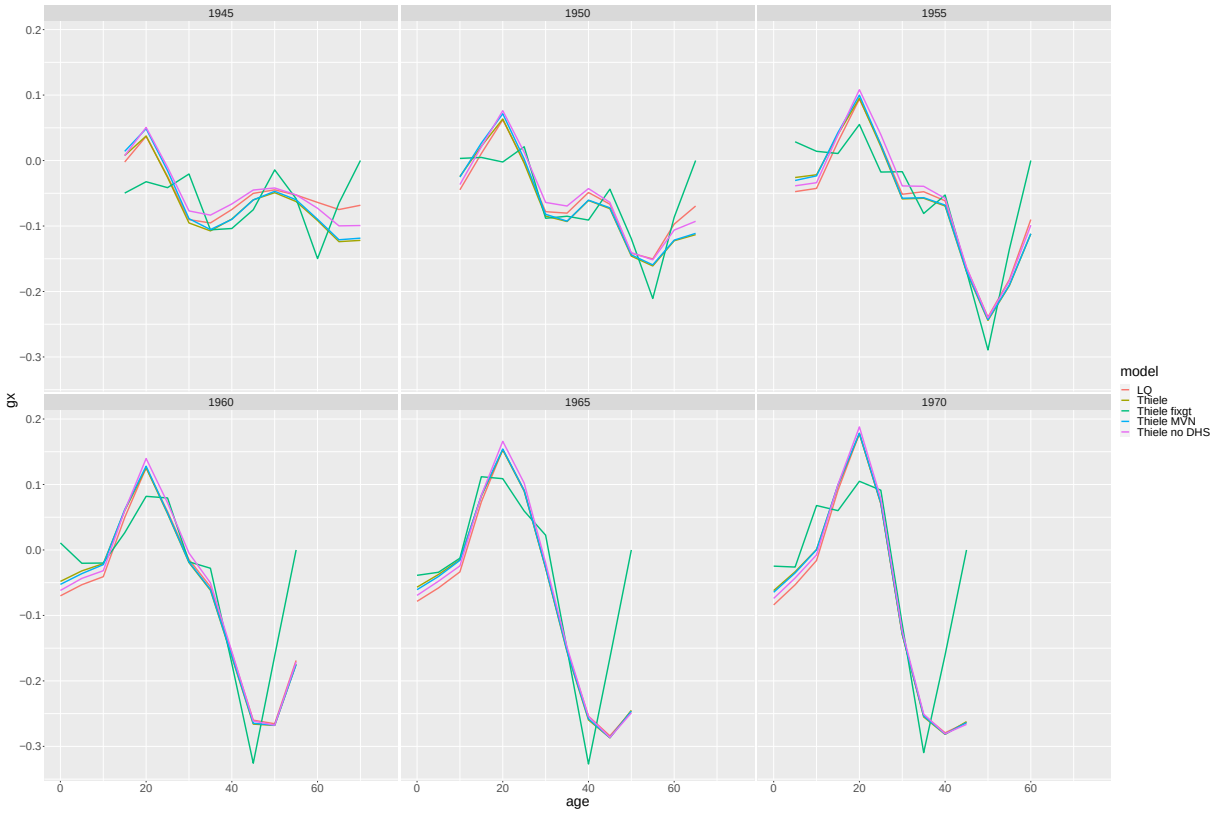

Figure 7: Estimated Migration Proportions

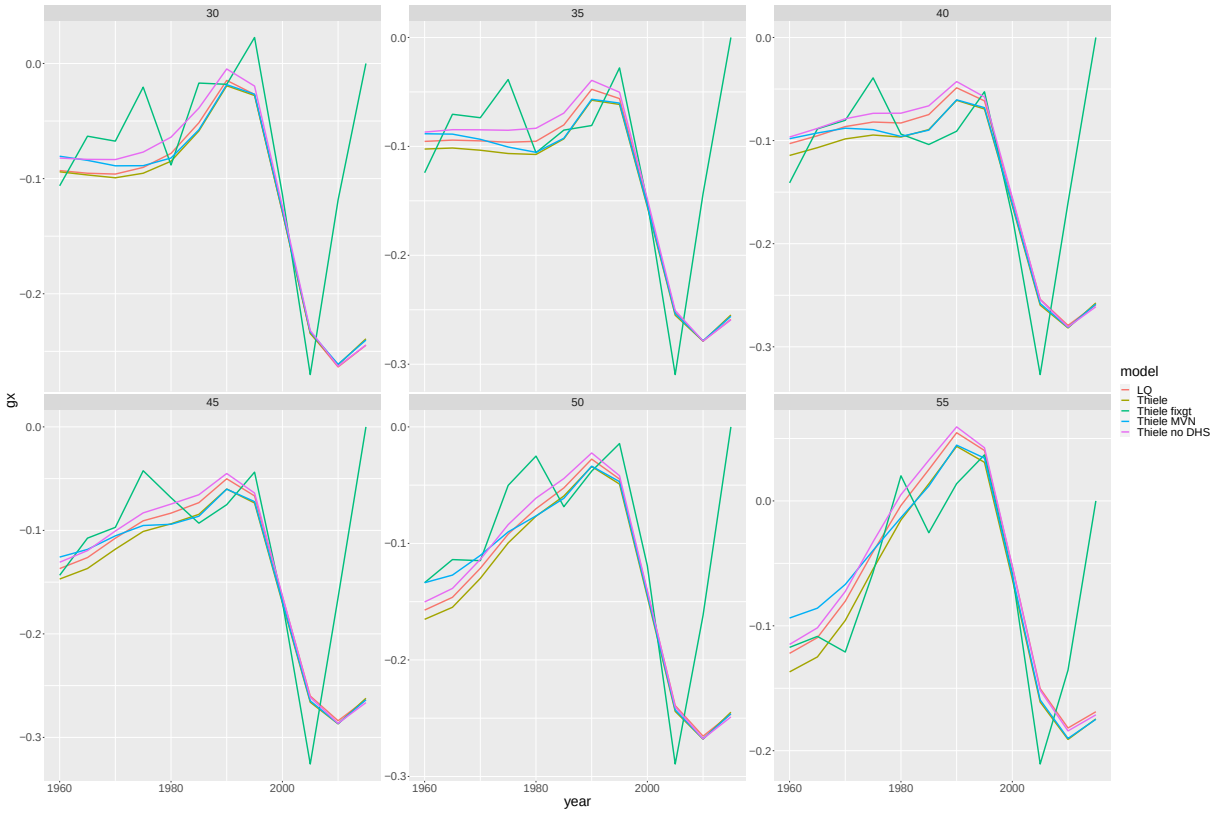

Figure 8: Estimated Migration Proportions

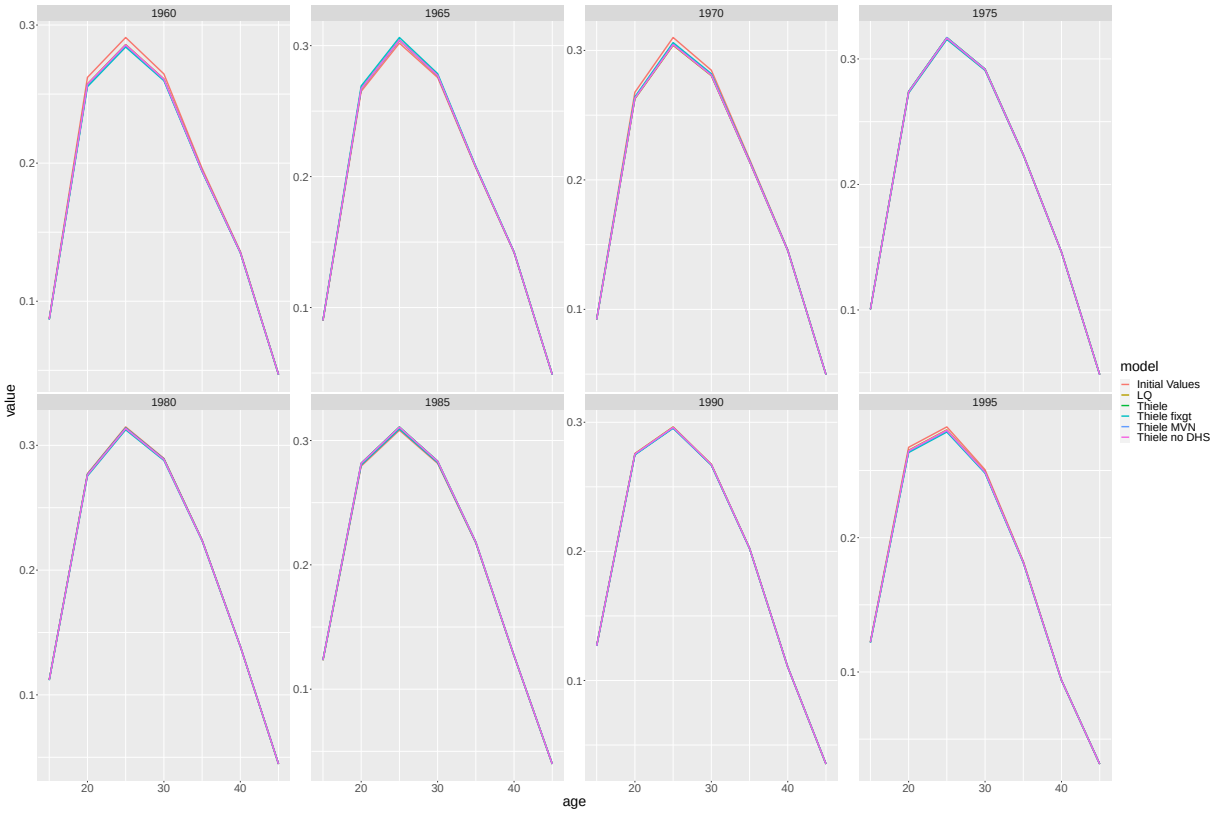

Figure 9: Estimated Fertility

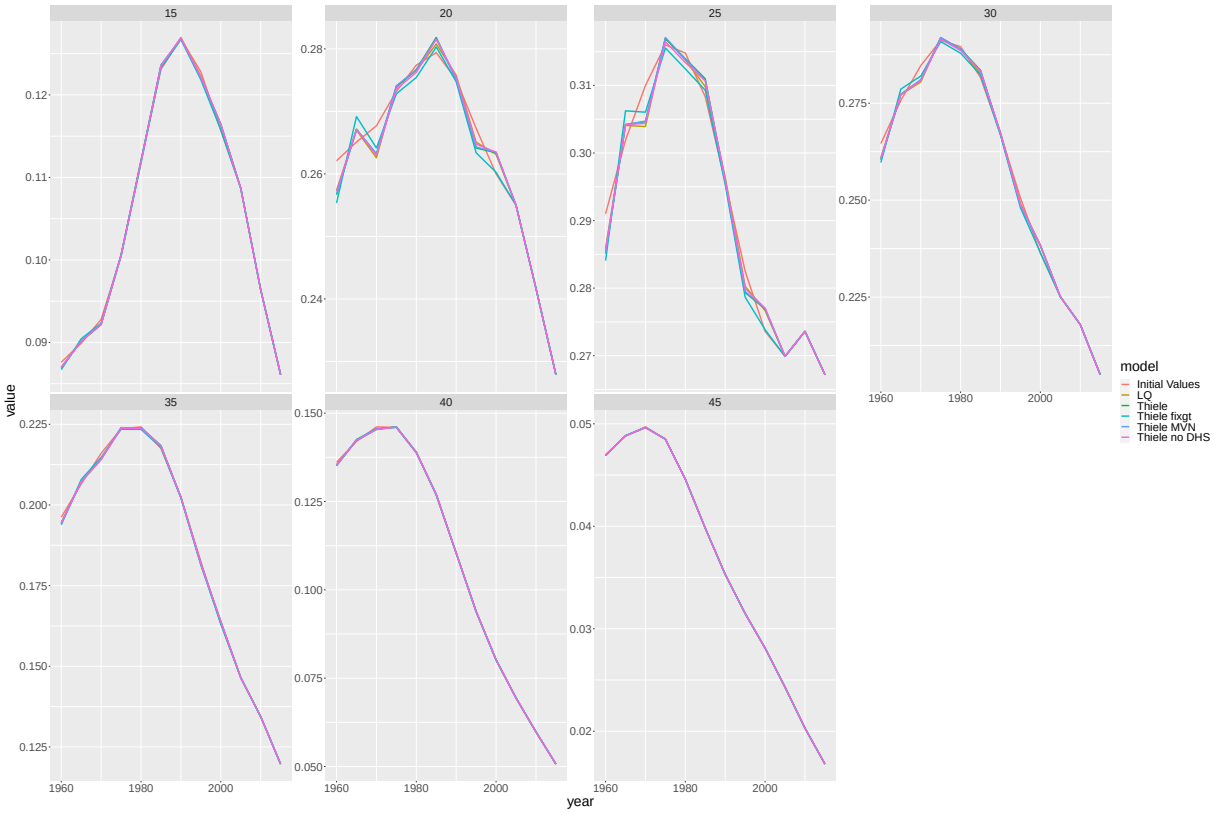

Figure 10: Estimated Fertility

LogQuad

```
##    user  system elapsed
##    5.02    0.15    5.43
```

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

Thiele

```
##    user  system elapsed
##   48.62    1.00   51.45
```

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

Thiele MVN

```
##    user  system elapsed
##   39.43    0.59   40.42
```

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

Thiele no DHS

```
##    user  system elapsed
##   16.04    0.33   16.36
```

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

Thiele fix rho_gt=0

```
##    user  system elapsed
##   42.35    0.72   43.50
```

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

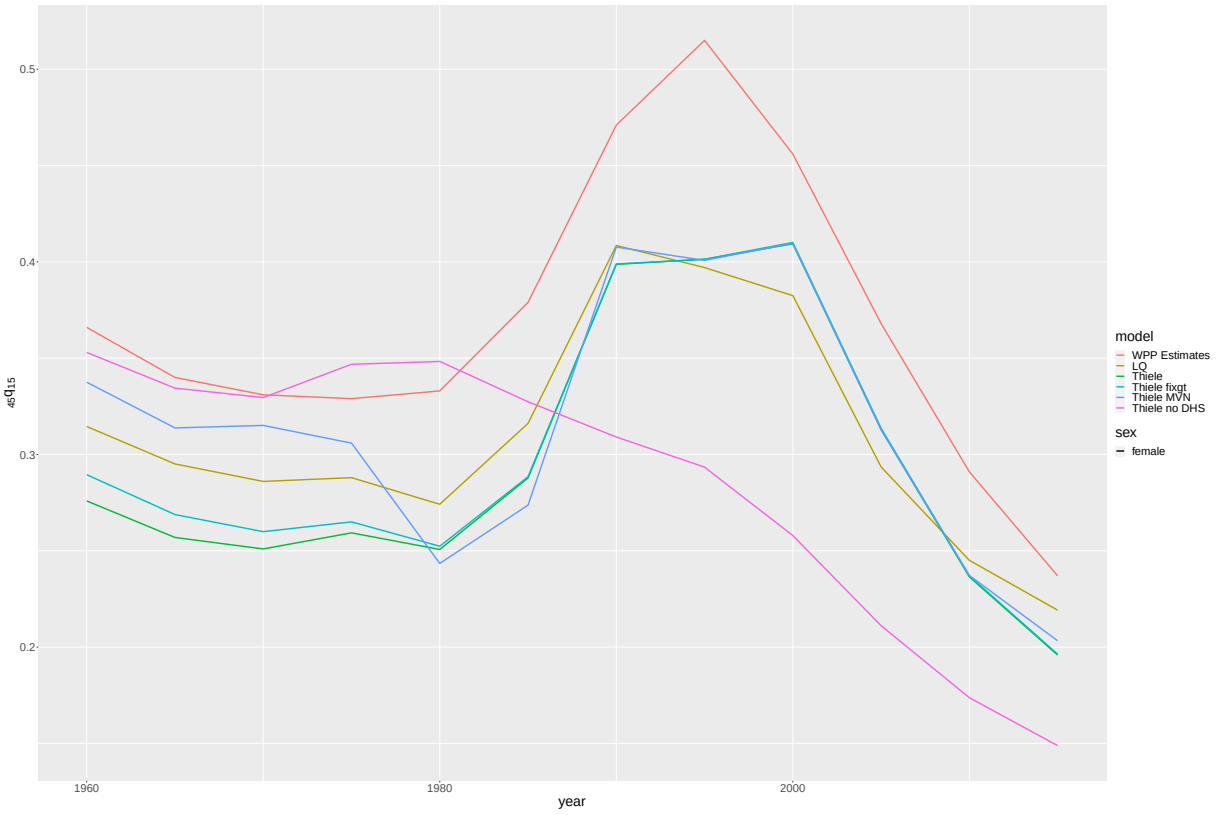

Figure 1: Estimated Adult Mortality

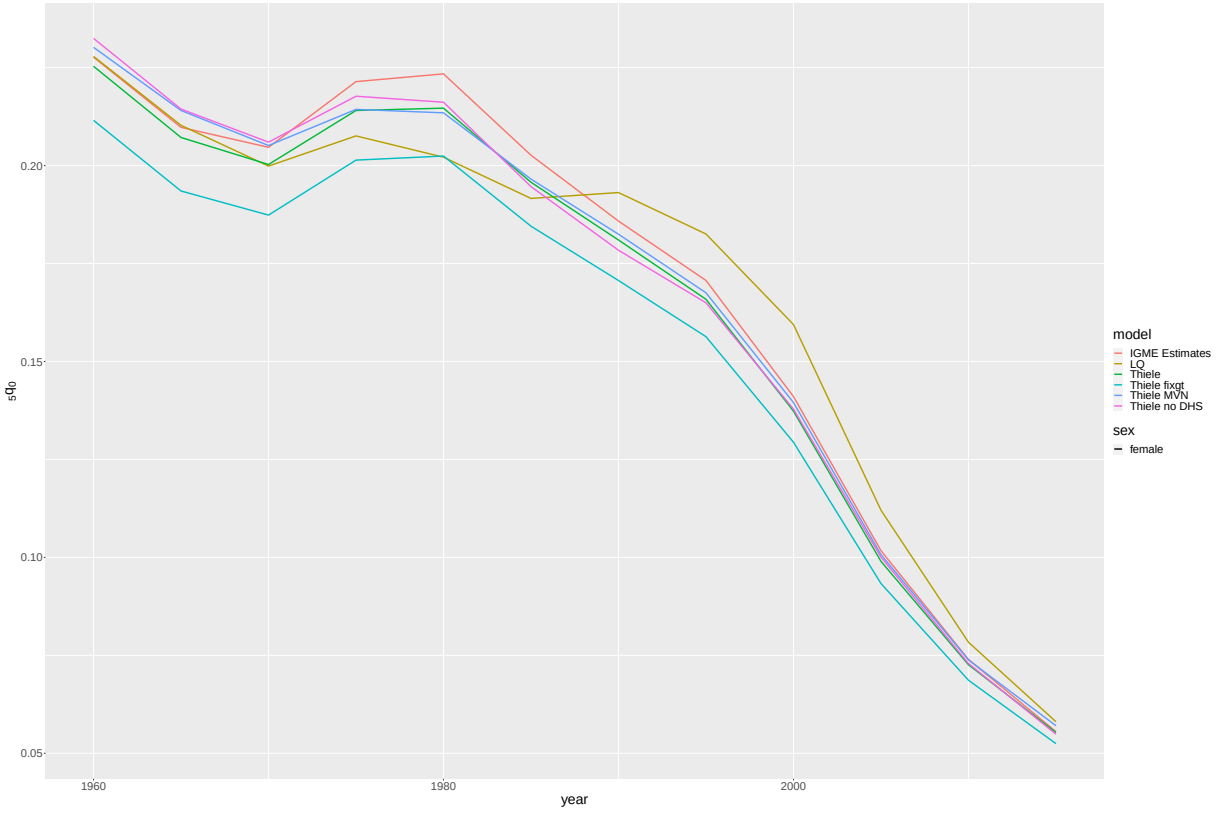

Figure 2: Estimated Child Mortality

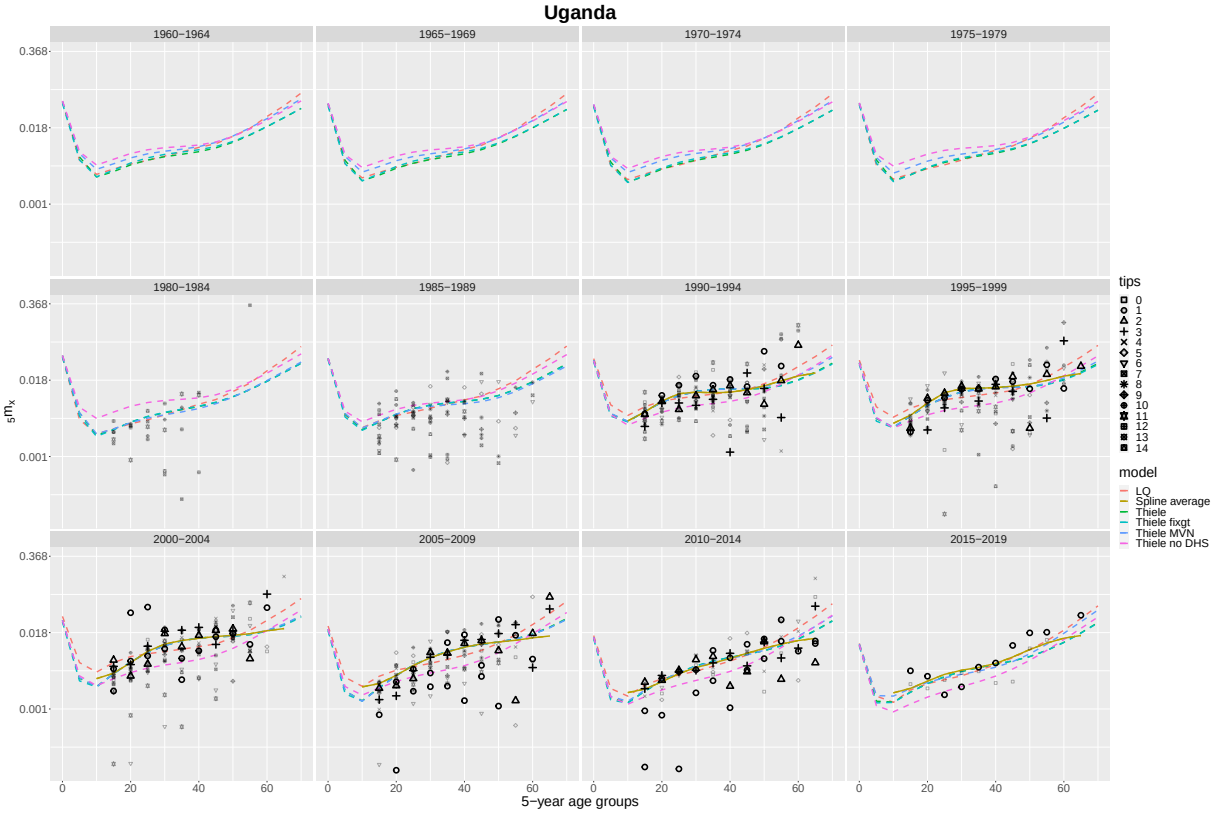

Figure 3: Estimated Mortality Schedules

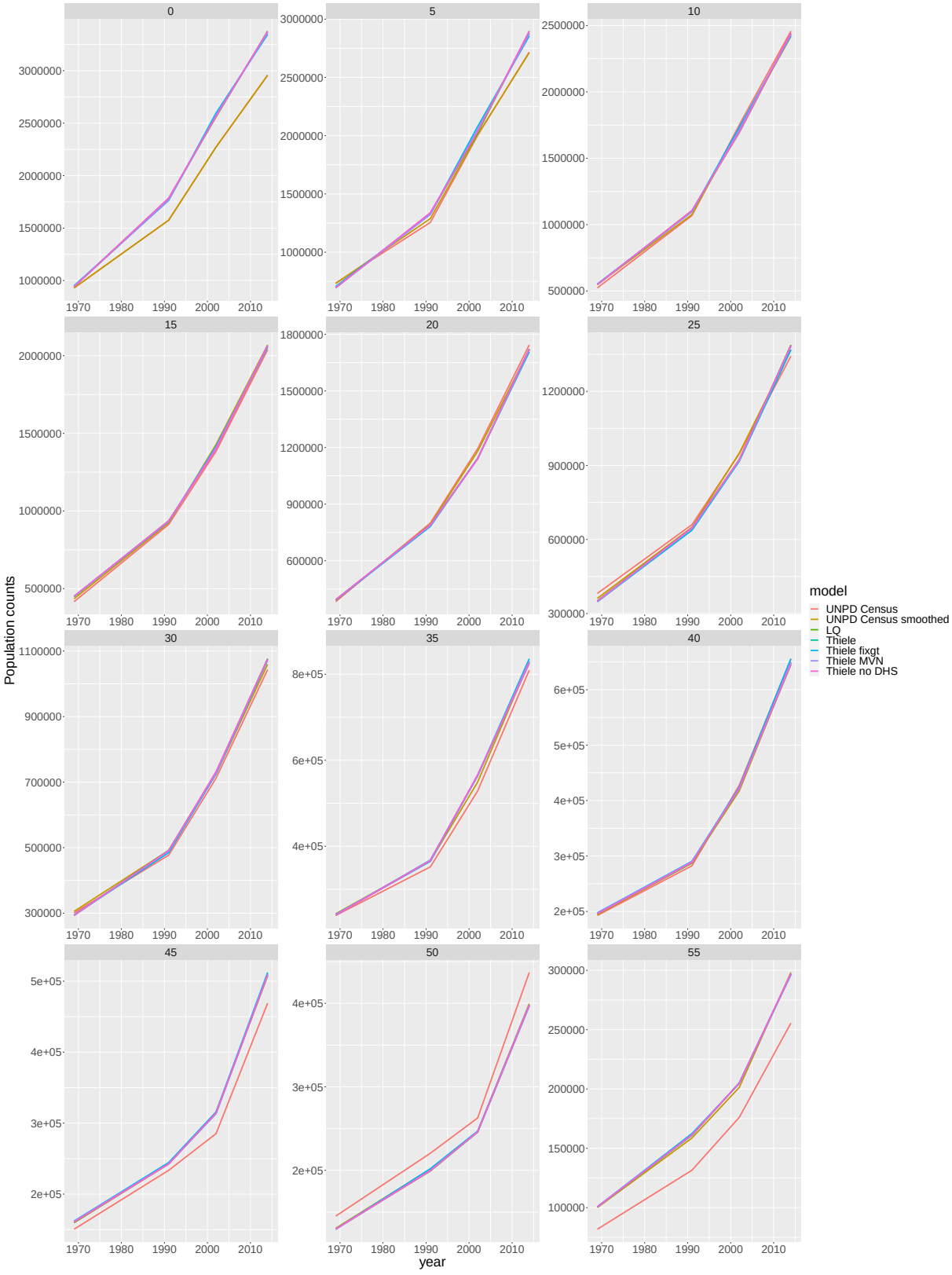

Figure 4: Estimated Population Counts

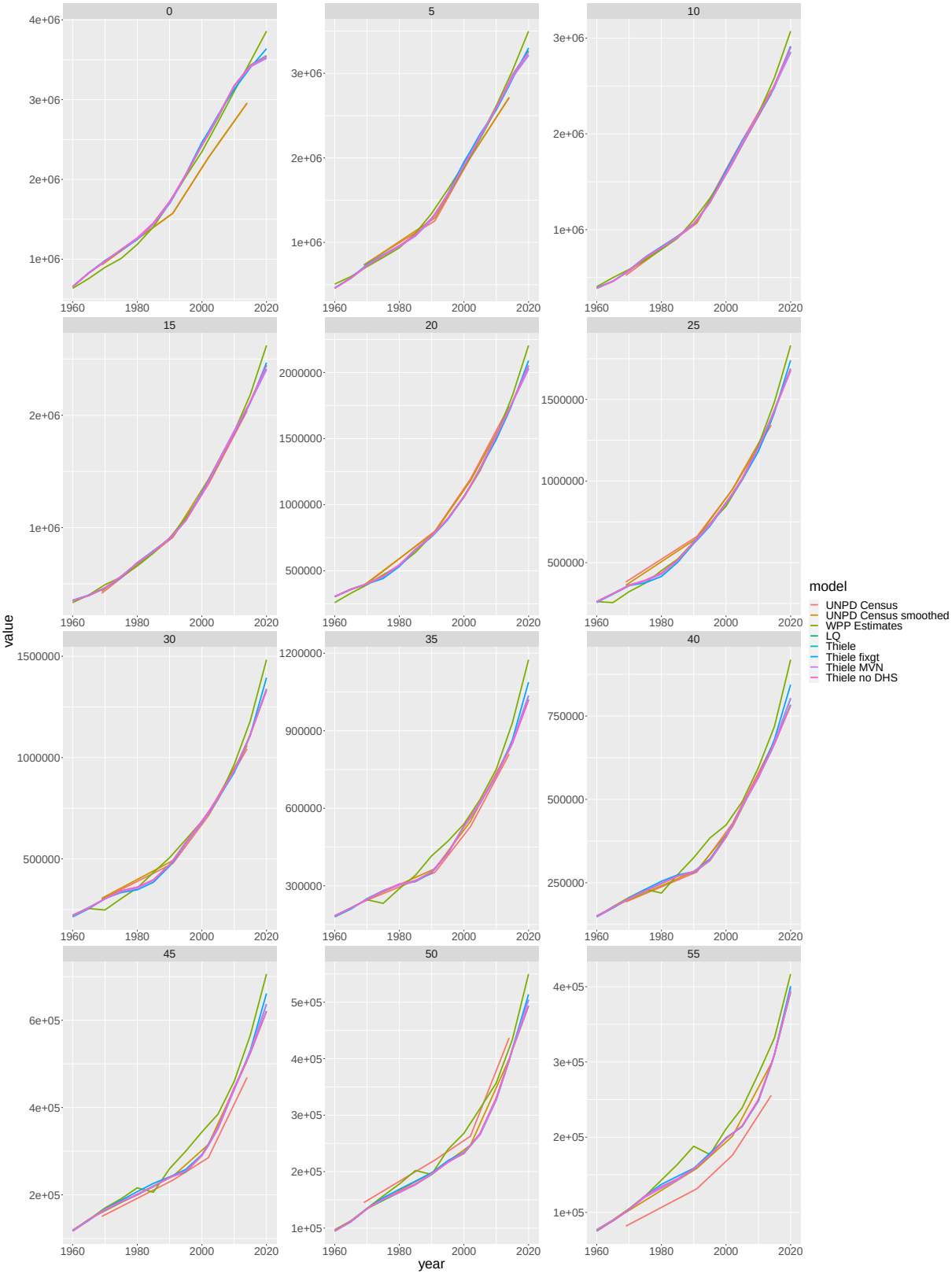

Figure 5: Estimated Population Counts

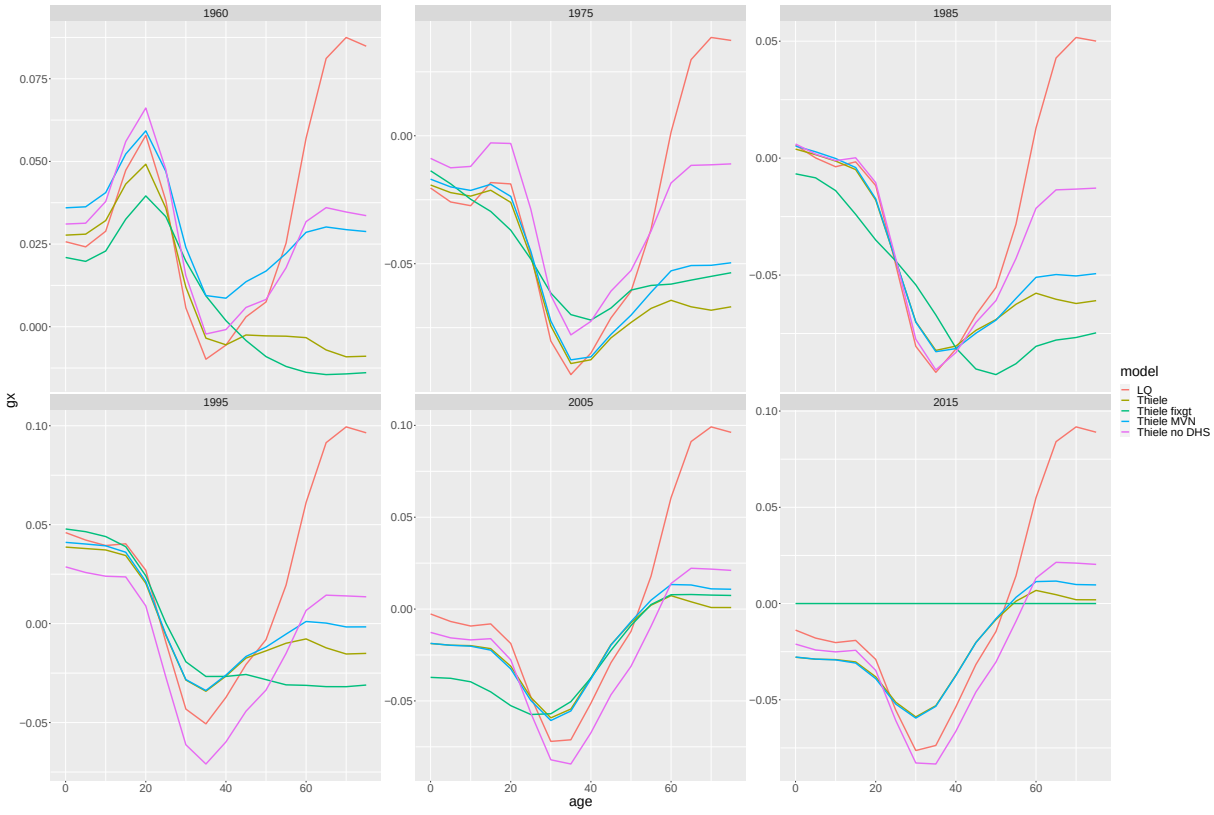

Figure 6: Estimated Migration Proportions

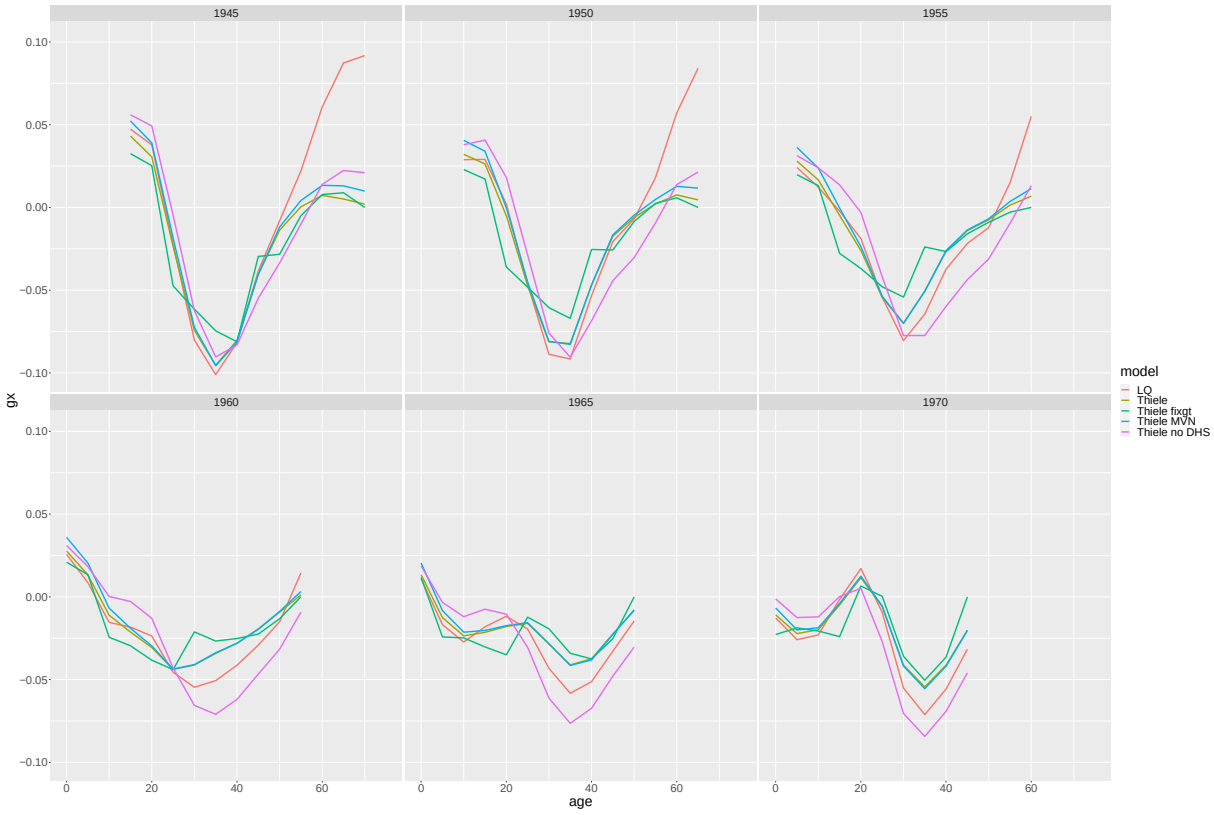

Figure 7: Estimated Migration Proportions

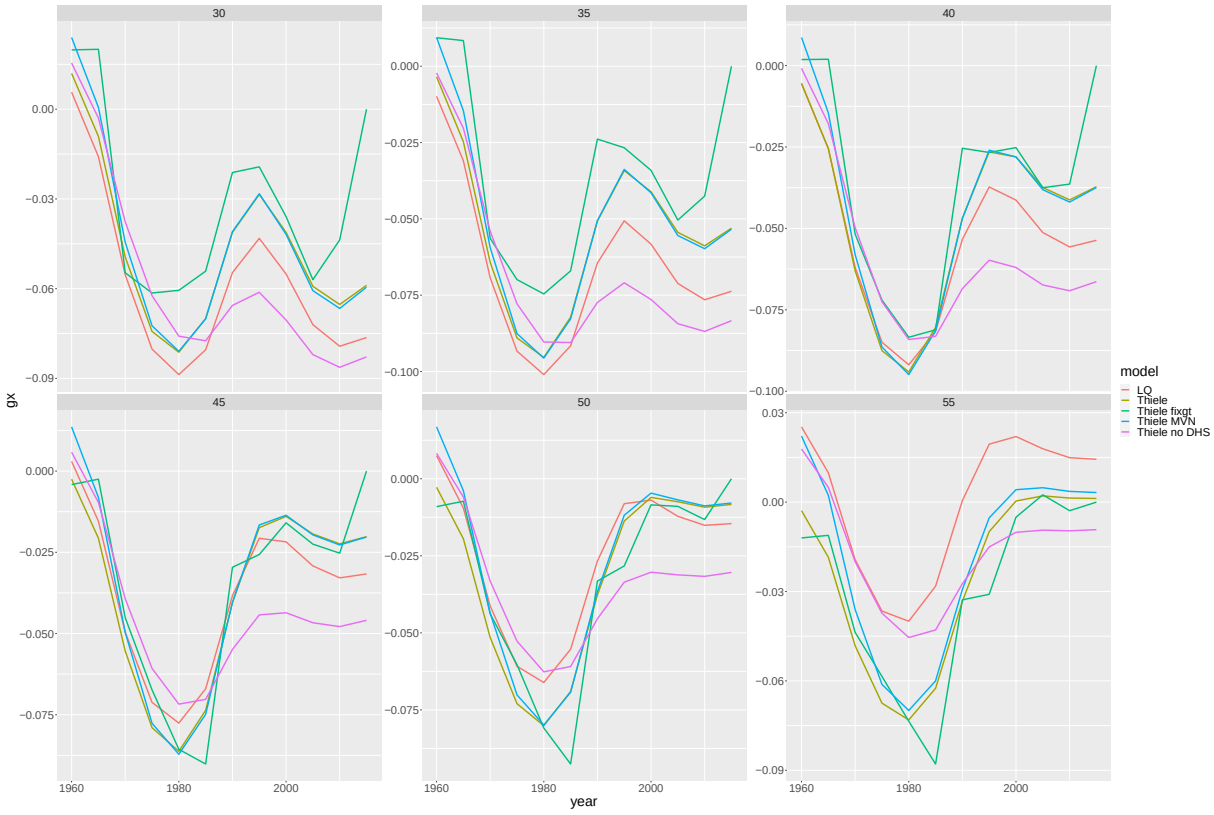

Figure 8: Estimated Migration Proportions

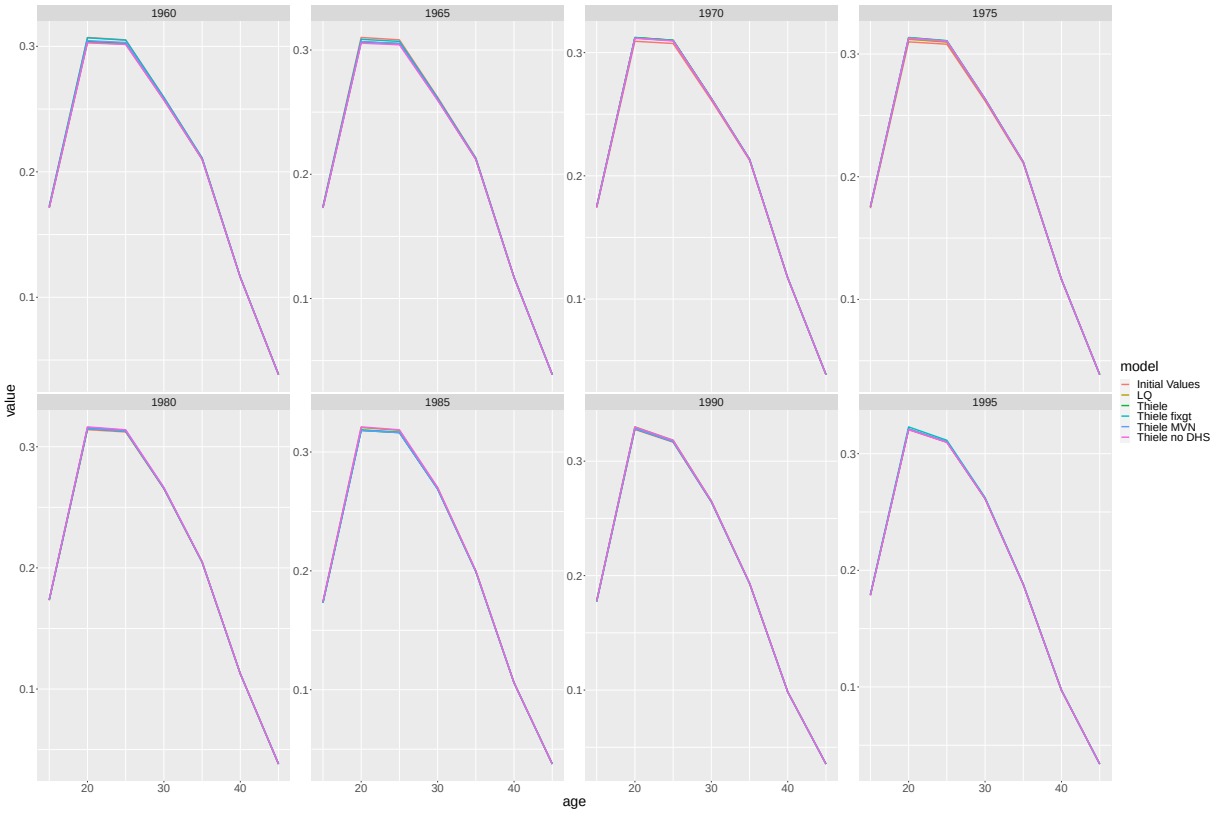

Figure 9: Estimated Fertility

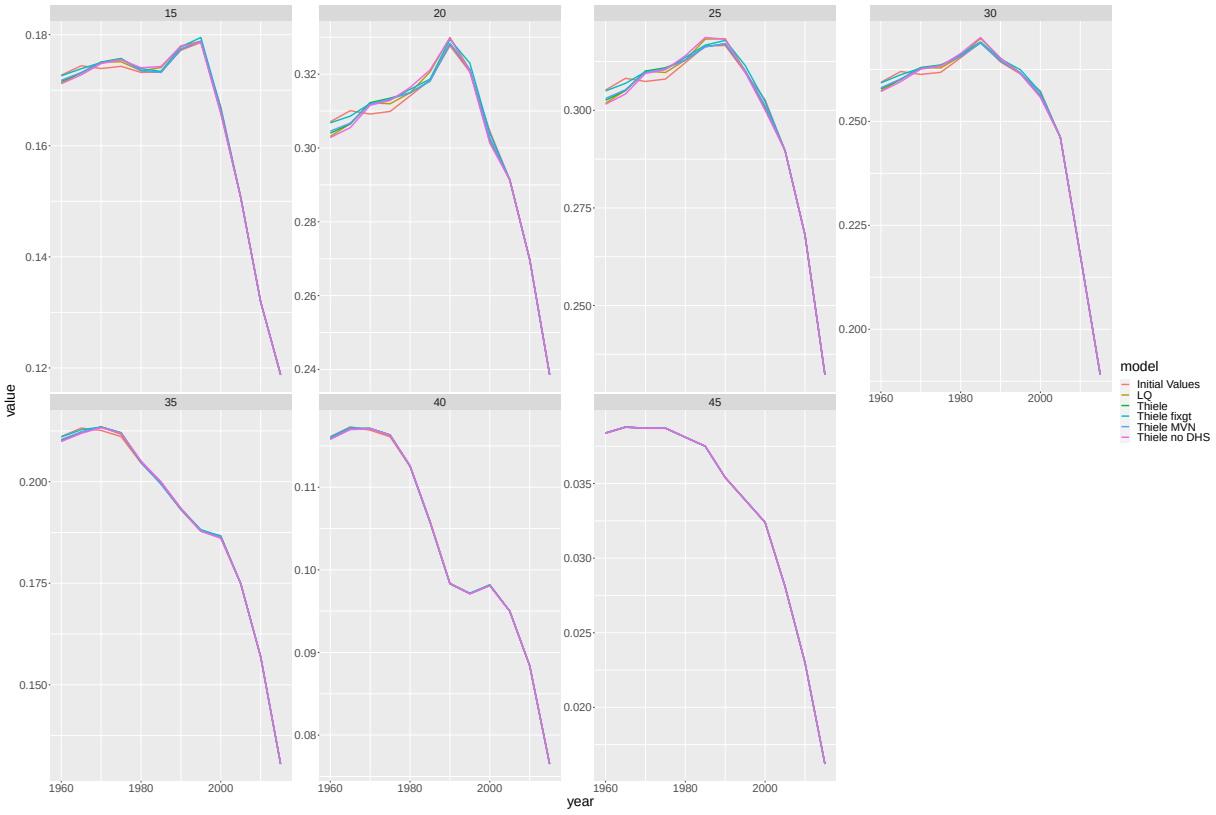

Figure 10: Estimated Fertility