

# South Africa

## [1] "Census Females"

## # A tibble: 18 x 8

##	*	aggr.age	`1970`	`1980`	`1985`	`1991`	`1996`	`2001`	`2011`
##		<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>
## 1		0	1632327	1736315	1358365	1893129	2251977.	2226085	2817868
## 2		5	1513074	1575298	1332389	1782993.	2336693.	2406137.	2394570
## 3		10	1348764.	1382085	1399441	1642750	2314907.	2510579.	2250611
## 4		15	1142882.	1296548	1265211	1571097	2192147.	2448870.	2504906
## 5		20	952966.	1187044	1196891	1472589	2035716.	2238729.	2679896
## 6		25	807406.	956402	1000419	1323364	1835591.	2003318.	2516635
## 7		30	695776.	799542	833799	1175631	1613717.	1789725.	1992804
## 8		35	603029	680398	704174	983348.	1379470.	1598192.	1758421
## 9		40	515926	576749	587718	816986	1124687.	1380426	1546290
## 10		45	436120.	488030	489247	671648	885848.	1123476.	1424543
## 11		50	362600.	401384	398974	565948.	704560.	877440	1206940
## 12		55	297728.	339598	318212	458901	601565.	698798.	985458
## 13		60	247674.	289582	308936	369214	535498.	594419.	773404
## 14		65	193298.	221493	244633	274265	438712.	496508.	556257
## 15		70	133027.	160492	170841	234870	319702.	378027.	454833
## 16		75	84691.	93129	106760	126677	221228.	260309.	315984
## 17		80	53949	59494	66852	86159	118149.	164176.	222222
## 18		85	48644	52494	57501	57829.	95115.	135317	180126

## [1] "Census Males"

## # A tibble: 18 x 8

##	*	aggr.age	`1970`	`1980`	`1985`	`1991`	`1996`	`2001`	`2011`
##		<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>
## 1		0	1622117	1756592	1365459	1925434	2246133.	2223731	2867585
## 2		5	1511795	1582313	1343319	1813819.	2328610.	2398574.	2425181
## 3		10	1336716.	1387903	1397197	1663472	2280138.	2479199.	2344276
## 4		15	1109962.	1336257	1203645	1587893	2109358.	2381102	2498573
## 5		20	919115.	1316011	1135300	1494166	1912284.	2137698	2694646
## 6		25	782368	1089762	1027540	1372128	1699104.	1873008.	2542680
## 7		30	675250.	908968	848049	1234243	1488215.	1632402.	2036206
## 8		35	591159.	754899	726751	1020908.	1282776.	1427784	1709346
## 9		40	516576.	626078	595215	843271	1053771.	1219094	1402327
## 10		45	442546.	513247	505889	674435	825470.	984585.	1195740
## 11		50	363686.	416271	389010	552976.	632887.	764732.	1011349
## 12		55	286143.	326920	300851	432148	486330.	579664.	811949
## 13		60	220801.	262972	243118	313535	377891.	436526.	612364
## 14		65	160633.	189590	194598	219243	292626.	321646.	401548
## 15		70	103104	123694	128751	171275	211793.	226574.	293497
## 16		75	59768.	68244	72518	84373	137011.	149064	165282
## 17		80	32982	33990	39123	49036	62894.	86738.	100693
## 18		85	29792	26737	28949	27177.	43803.	59628.	75542

*Thiele log-Normal Hump RW*

##	user	system	elapsed
##	45.52	0.42	46.05

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

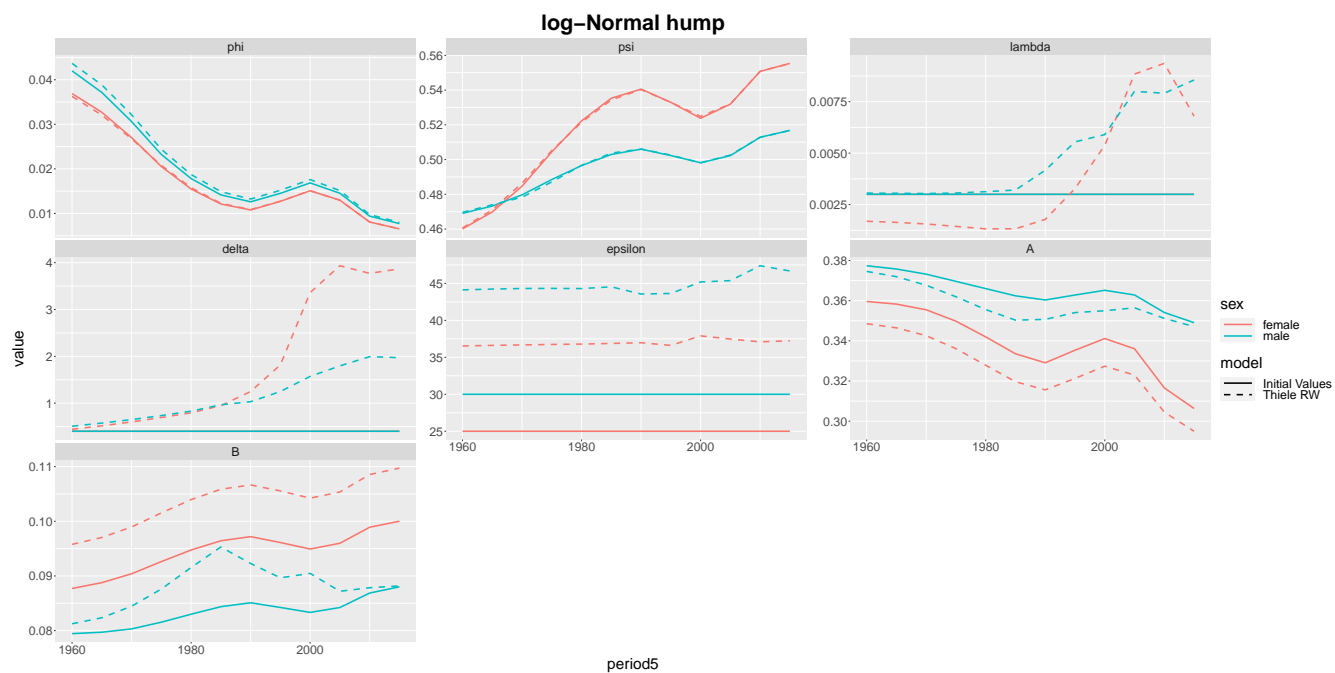


Figure 1: Estimated parameters



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

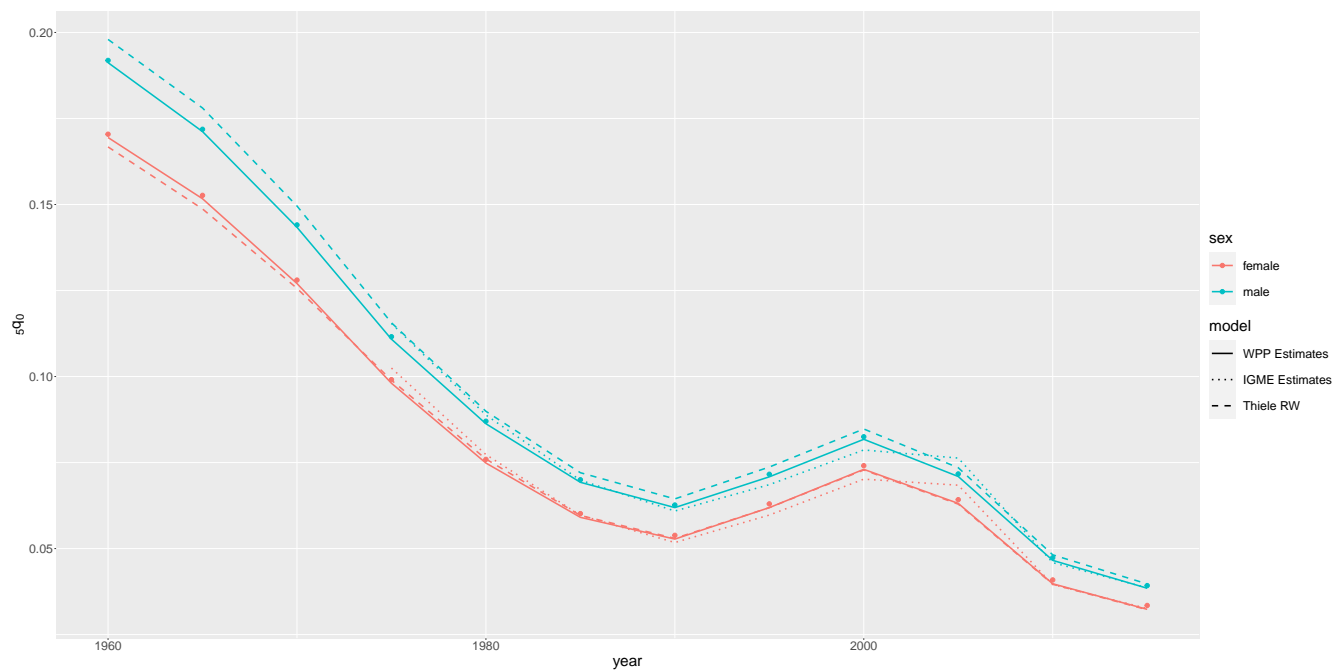


Figure 3: Estimated  $_{5}q_0$

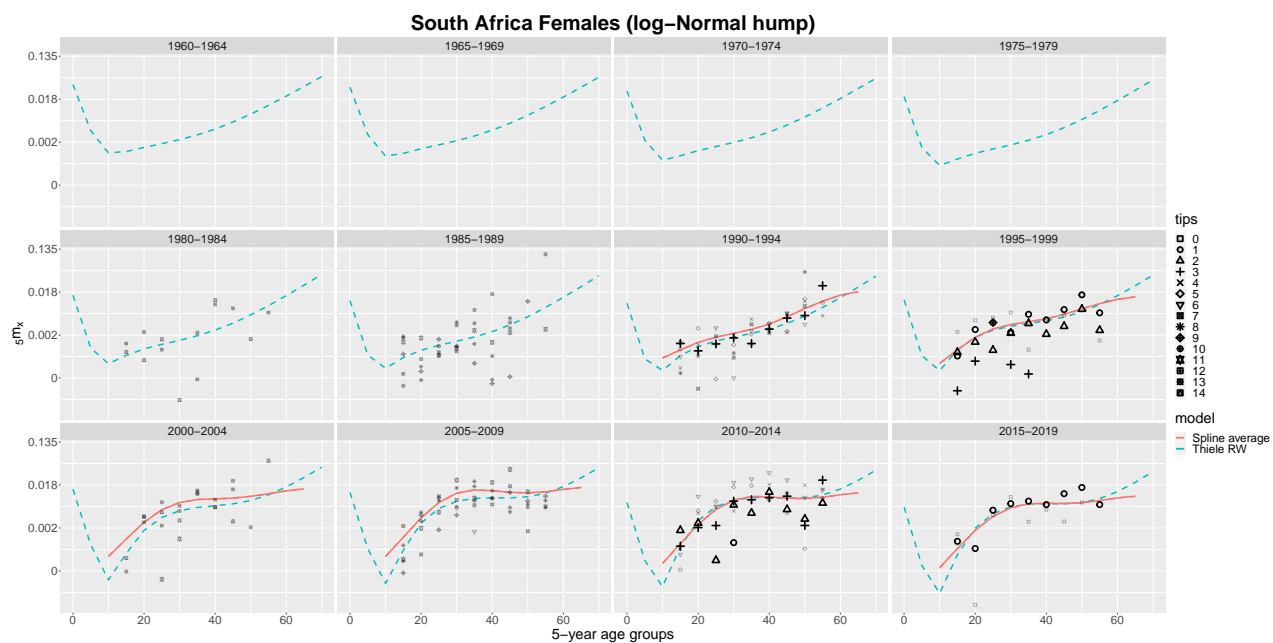


Figure 4: Mortality Schedules

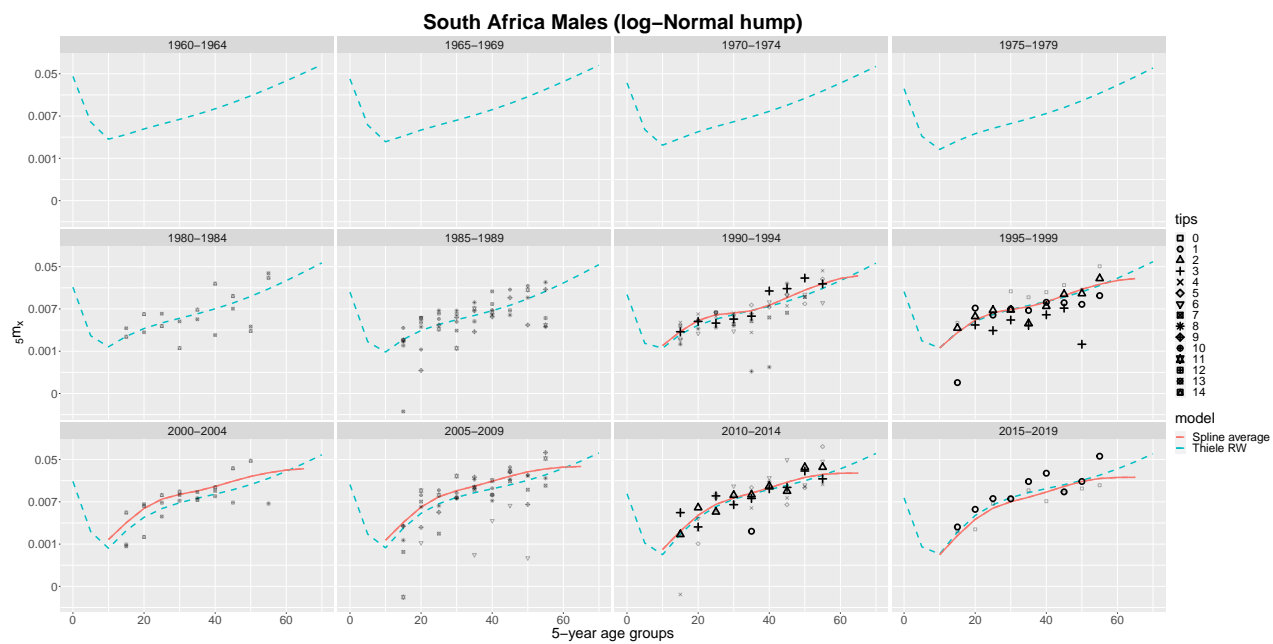


Figure 5: Mortality Schedules

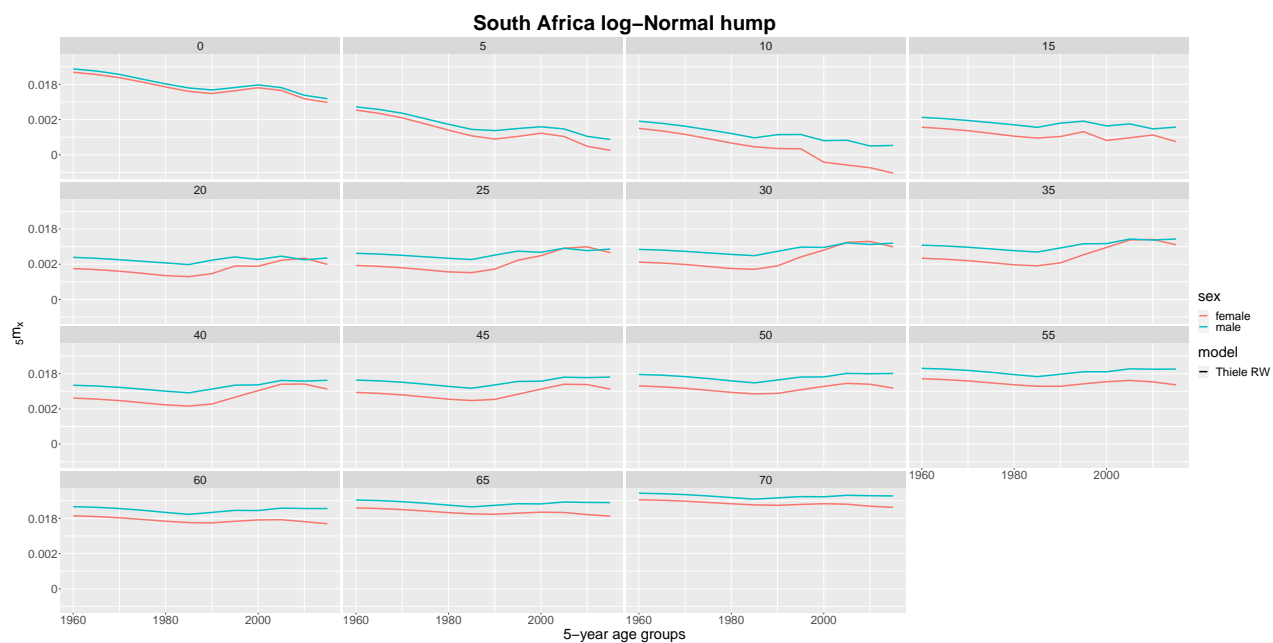


Figure 6: Mortality Schedules

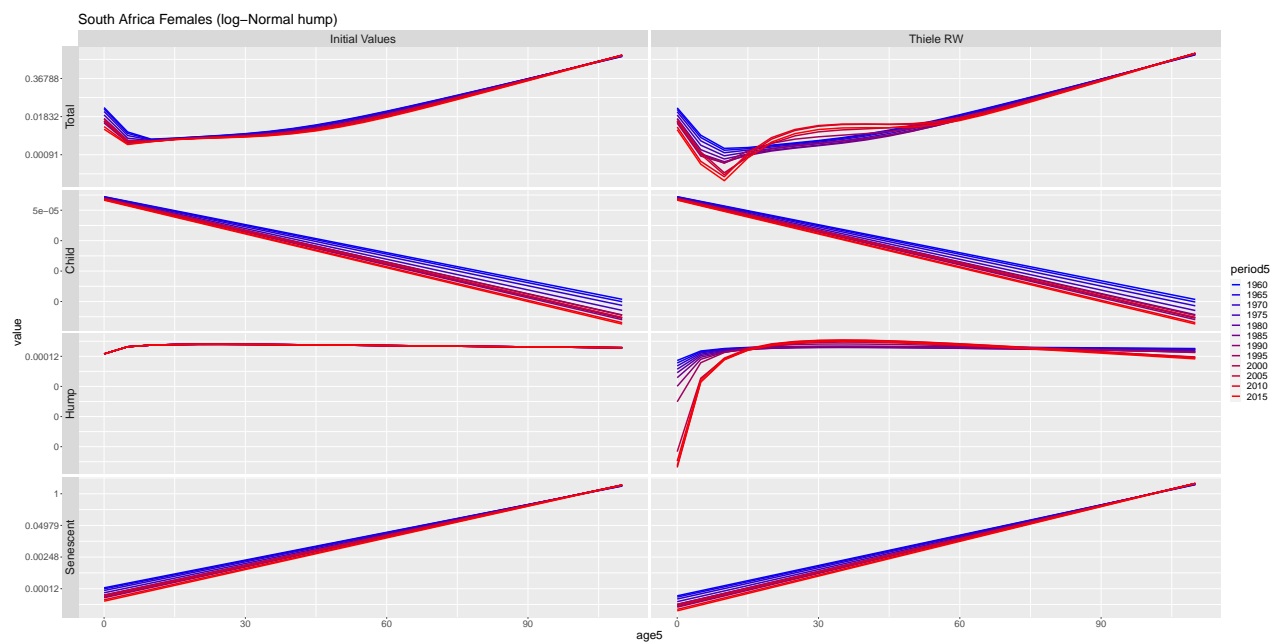


Figure 7: Thiele Decomposed

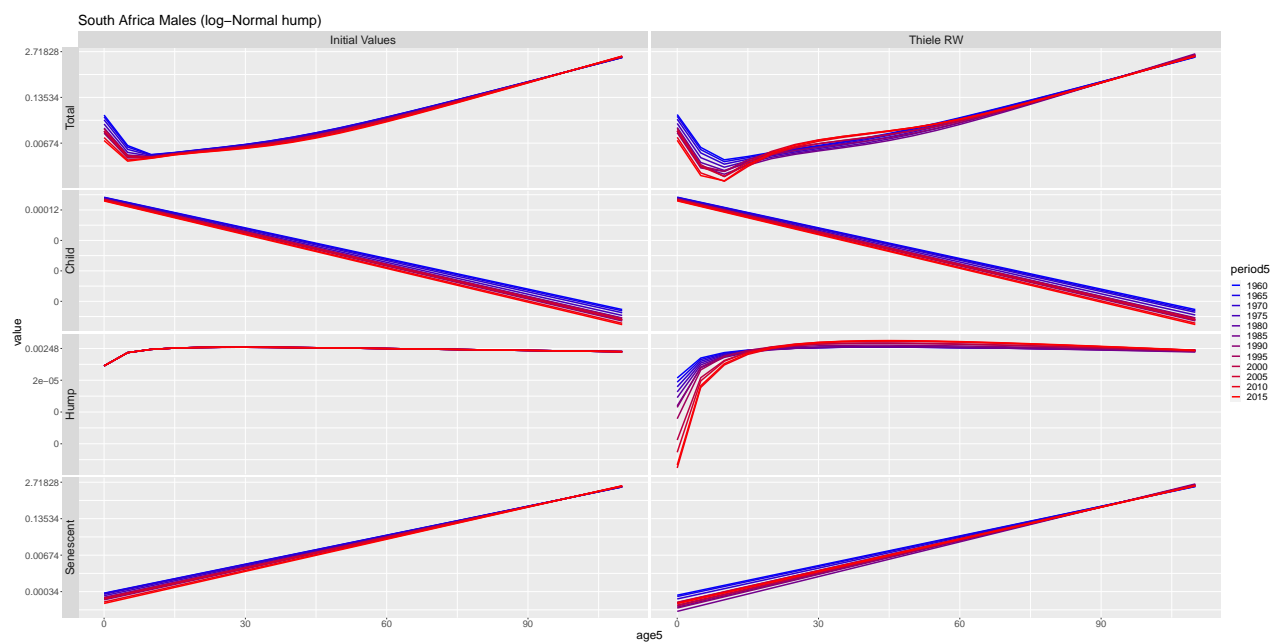


Figure 8: Thiele Decomposed

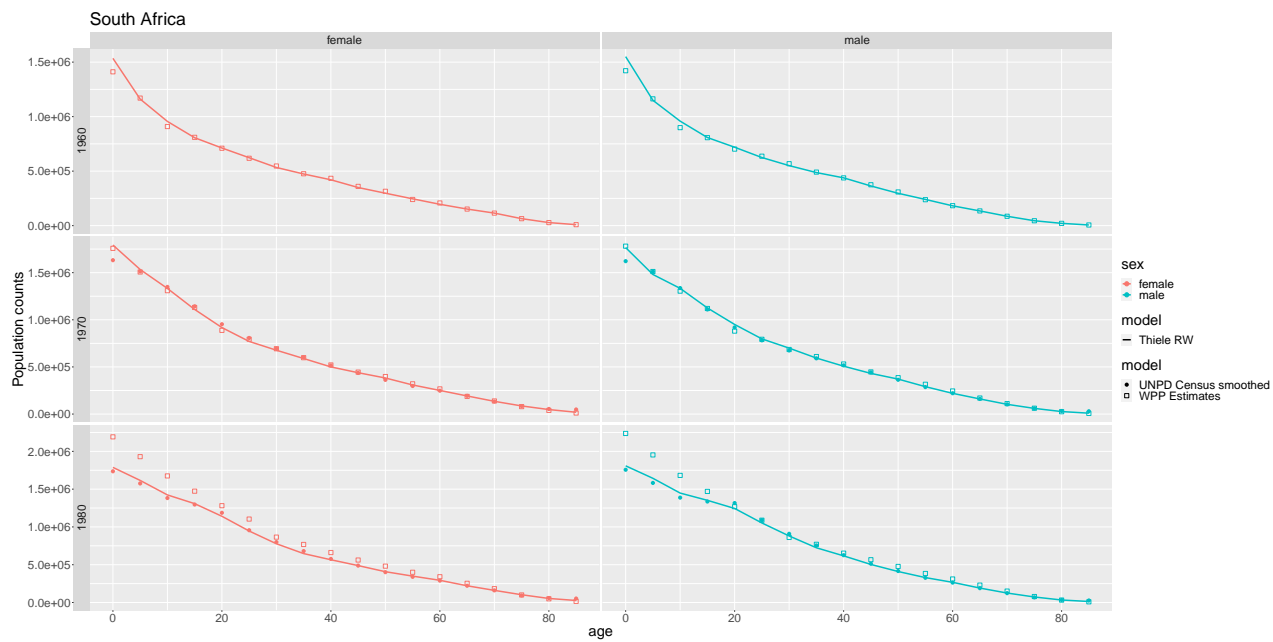


Figure 9: Population



Figure 10: Population

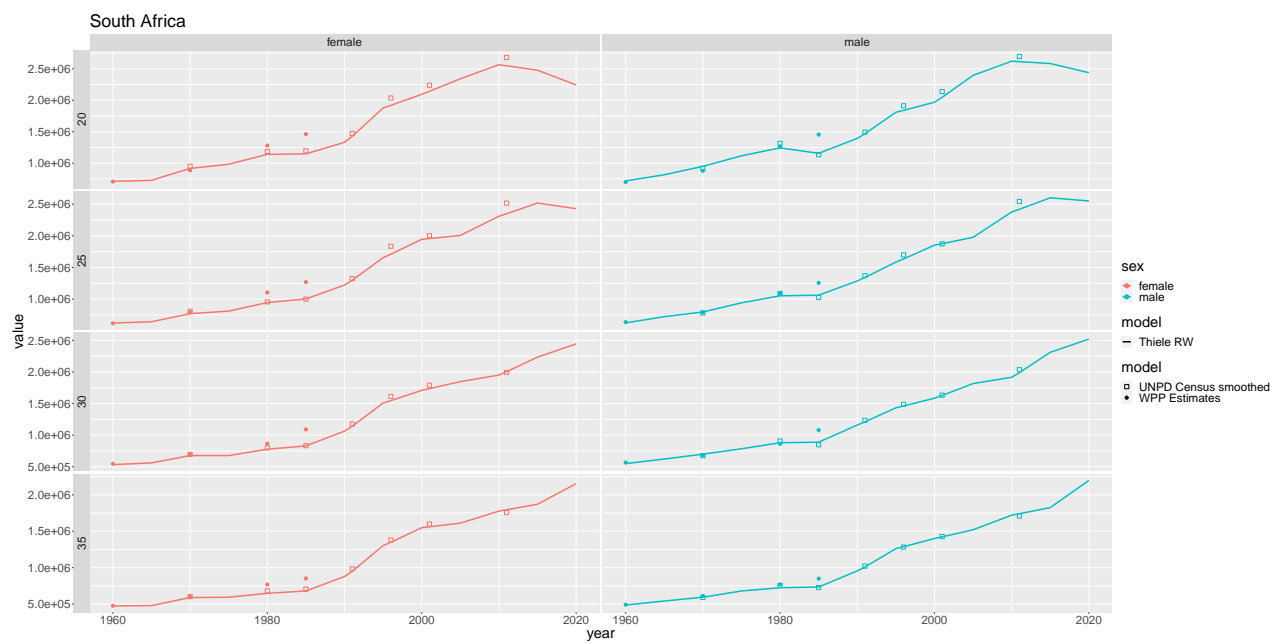


Figure 11: Population



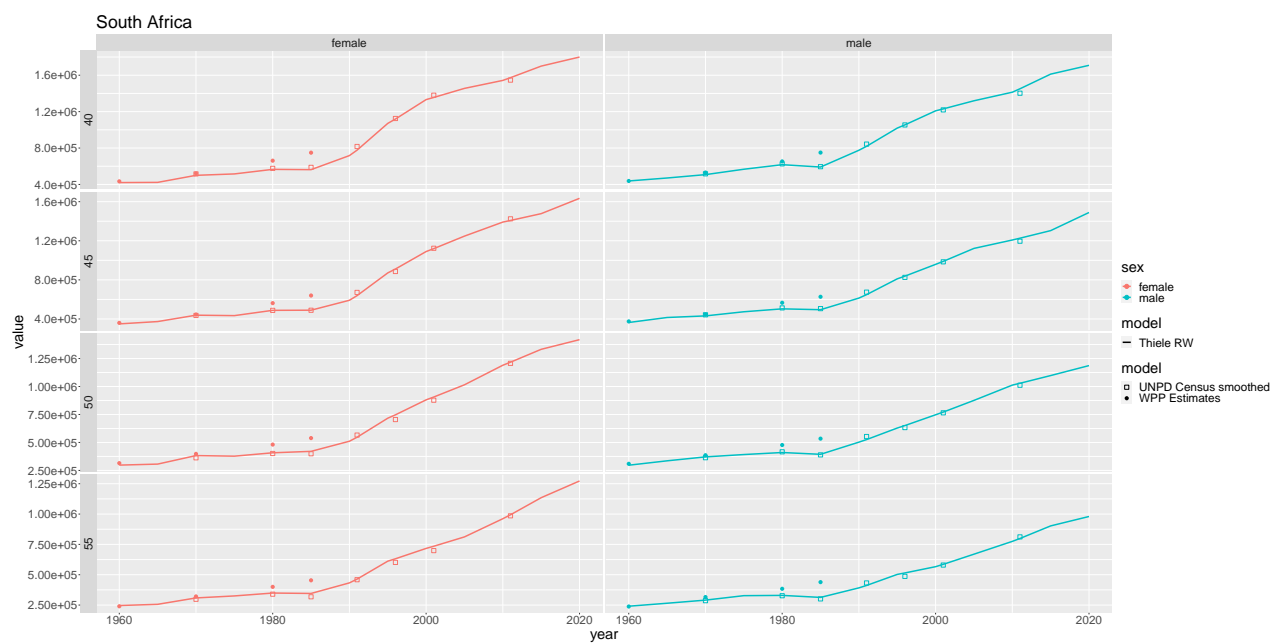


Figure 12: Population

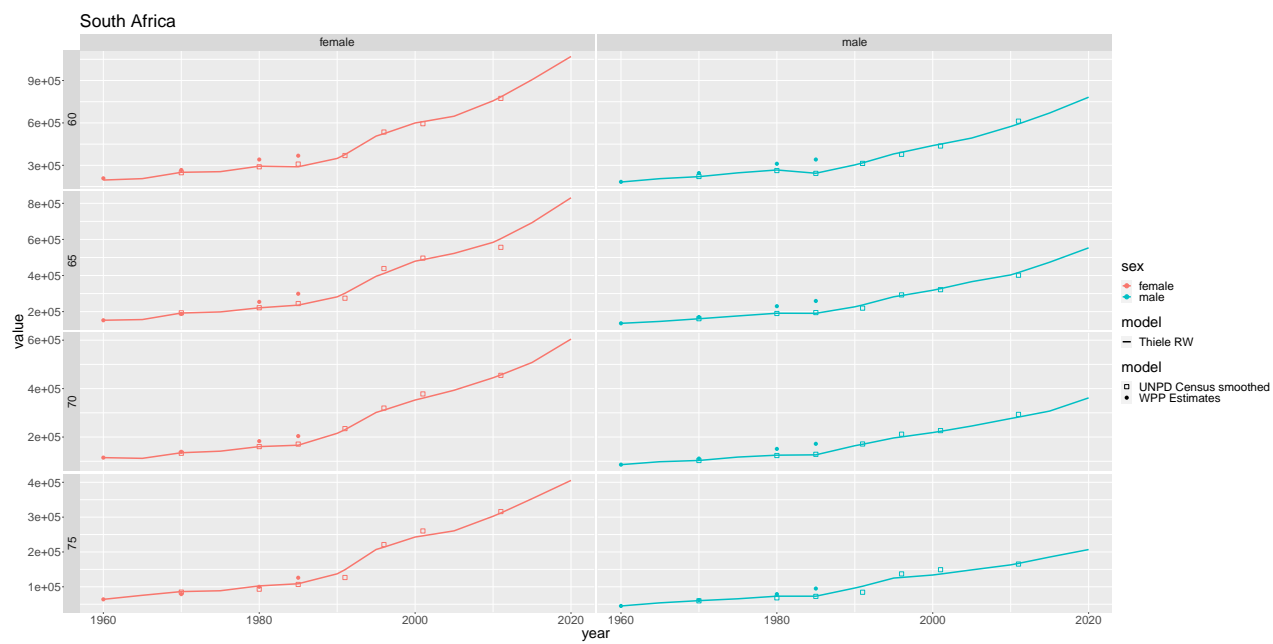


Figure 13: Population

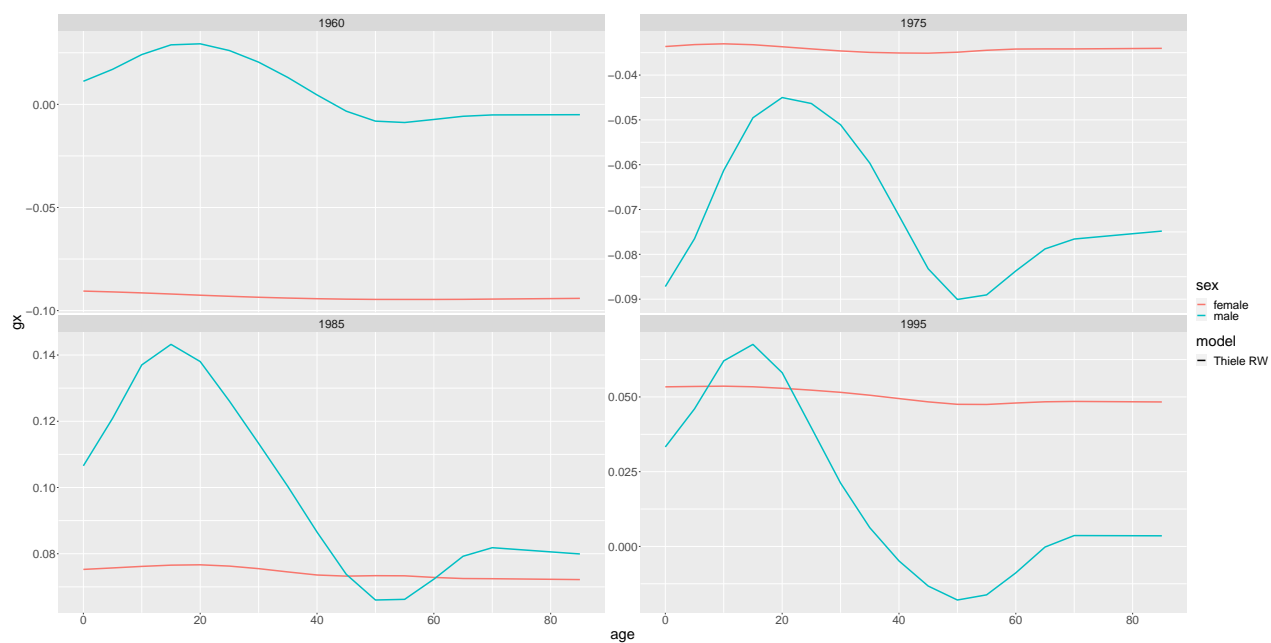


Figure 14: Migration

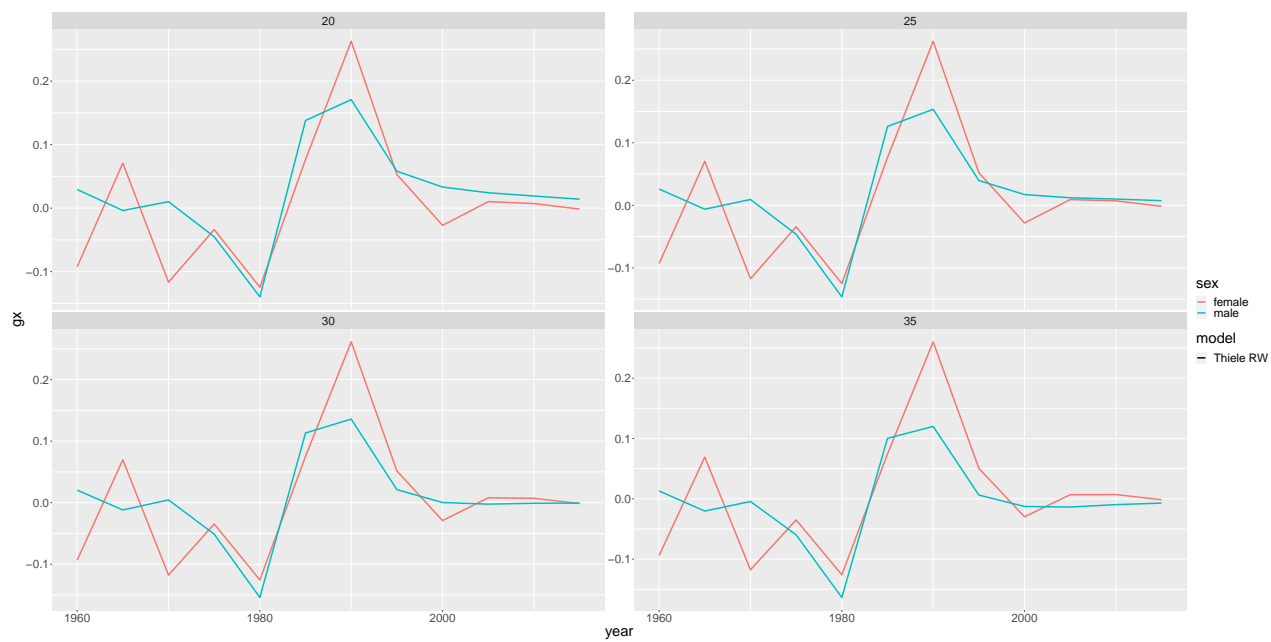


Figure 15: Migration

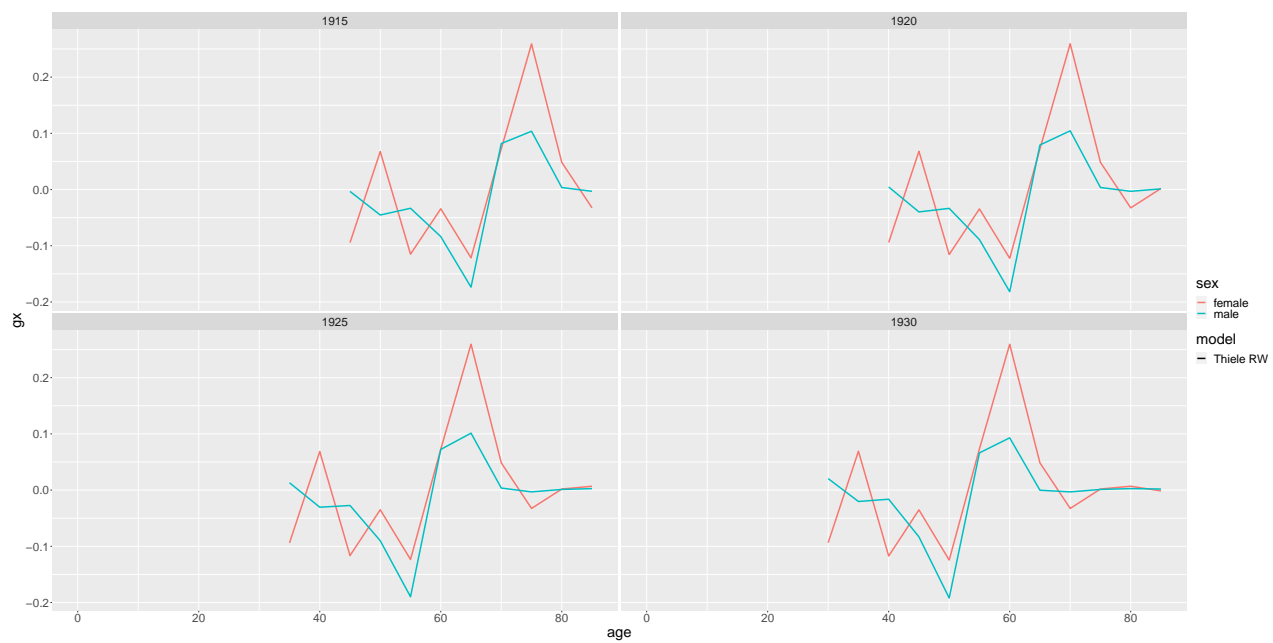


Figure 16: Migration

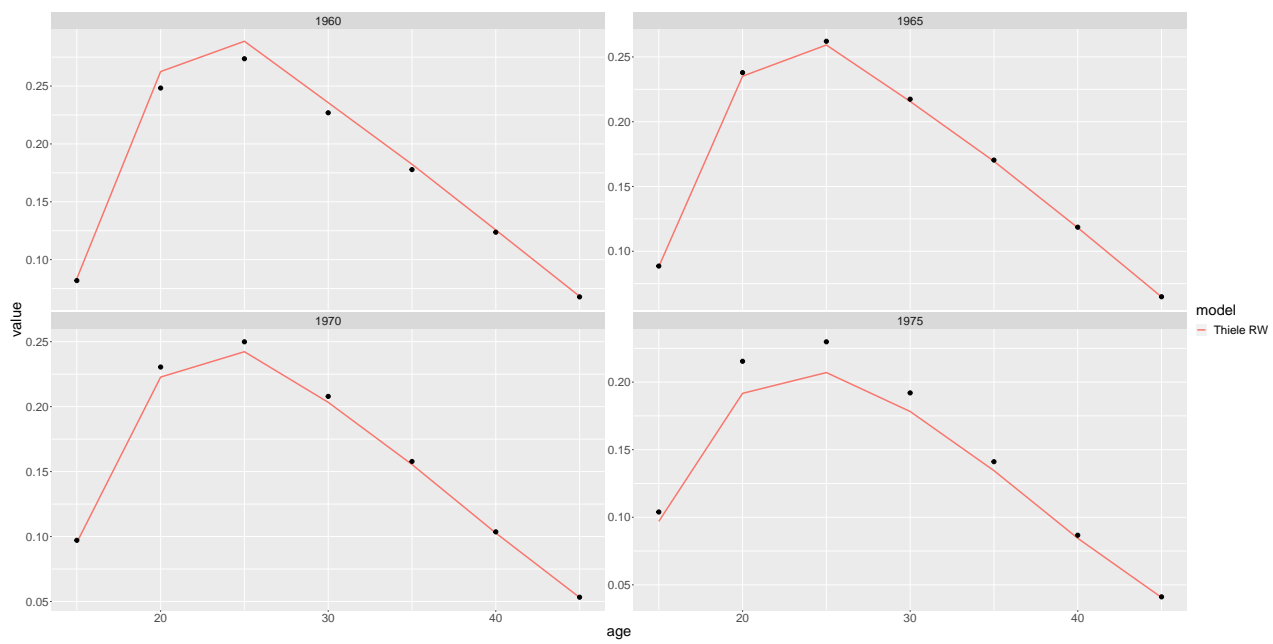


Figure 17: Fertility

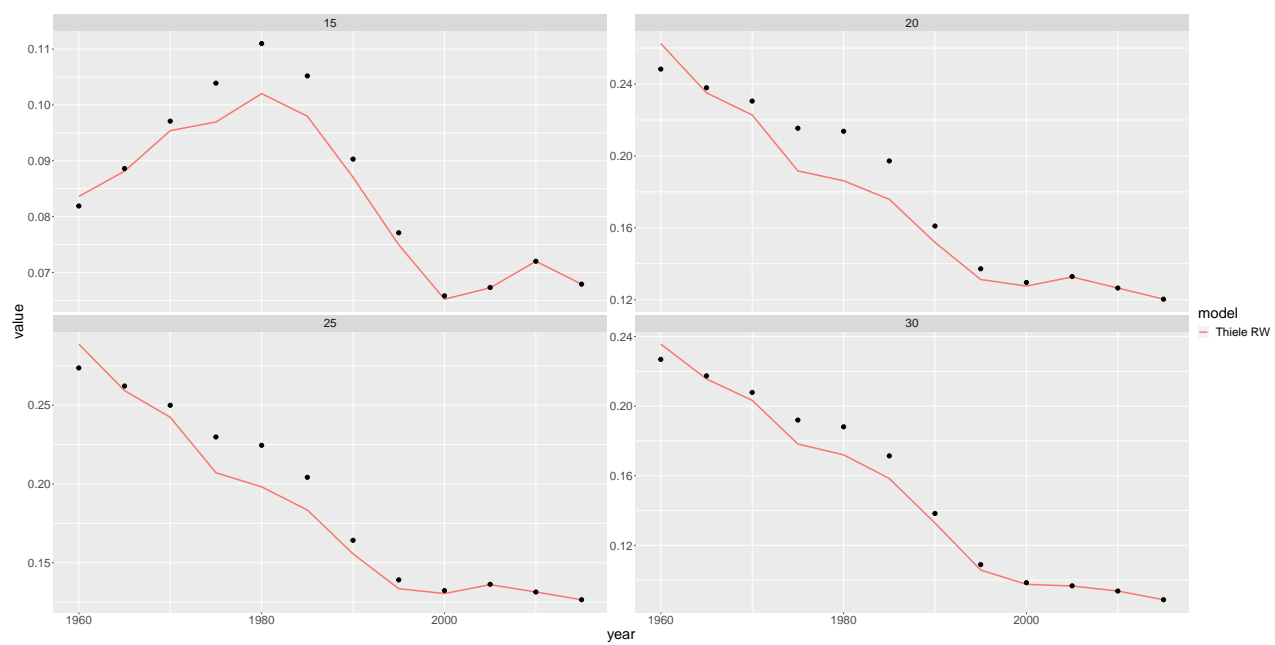


Figure 18: Fertility