

- Fixed some codes and changed some aesthetics
  - A lot more countries converged when using RWs for the hump component
  - sometimes in a few countries it still fails to converge, needed tweaks in the initial values
- Currently the RW for the parameters of the hump components initiate in 1960, i.e. prior variance increases over time, will attempt to fit it backwards or look for a more even variance
- Used WPP  ${}_5q_0$  estimates instead of IGME estimates for all countries for consistency
  - WPP only has  ${}_5q_0$  estimates for total sex on the website, sex-specific estimates currently using are derived from their sex-specific abridged life tables
  - WPP estimates are generally higher and smoother than the IGME estimates
  - use WPP only when IGME isn't complete?
  - use WPP only in years where IGME do not have estimates?
- Estimated  ${}_{45}q_{15}$  are much lower than the GBD/WPP estimates in pre-DHS periods
- Currently fitting 5-9 up to the age group before oag, would try and see if I could include oag back to the likelihood
- Will try to center priors for the  $\rho$ 's at around 0.5 instead of 0
- Increase prior mode for log-population hypervariance / Allow higher variance at older ages?

## Angola:

- only 1 census (in2014) from DYB after 1960 (also one in 1960 but at the moment using WPP 1960 for generality)

## Benin:

- unrealistic AB term
- ${}_{45}q_{15}$  crossing over
- over-smoothed humps compared to DHS?
- female lambda > male lambda

## Burkina Faso:

- consistent lower estimated  ${}_5q_0$  compared to the WPP/IGME U5MR estimates
- over-smoothed humps at early years?
- female lambda > male lambda

## Burundi

- estimated epsilon too high?

## Cameroon

- shape of female lambda vs male lambda entirely different, questionable?
- female lambda > male lambda

## Chad

- male estimated B wiggly
- female lambda > male lambda
- female mort > male mort at 10-14 and 15-19 at early years

## Congo

- fails to converge when only fitting to 5-9 to 70-74 using DHS 15-19 to 45-49
- female lambda > male lambda
- check what happened around 1995-1999
- migration wiggly

## Congo Democratic Republic

- only 1 census from DYB after 1960
- some DDHarmony error that I have yet to look into

## Cote d'Ivoire

- female lambda > male lambda
- estimated  ${}_{45}q_{15}$  crossing over at early years
- questionable migration?

## Eswatini

- estimated epsilon might be too high?
- questionable migration?

## Gabon

- inconsistency in census period labeling, needs to go back to it

## Gambia

- requires different initial values ( $\text{init marginal}_{p\text{rec}} = 2, \rho = 2$ ) *whole thing is wrong*, **experiment without DHS**
- female lambda > male lambda when using full data
- unrealistic AB term

## Guinea

- estimated lambda wiggly
- female lambda > male lambda
- estimated  $_{45}q_{15}$  crossing over at early years
- over-smoothed humps?

## Kenya

- messy estimated B
- spike  $_{45}q_{15}$  in 1975
- estimated mort schedules using full data vs restricted data differ a lot (coz of B)!

## Lesotho

- requires different prior means for the hump component to converge ( $\lambda = 0.008, \delta = 1$ )
- wouldn't converge with restricted data
- unrealistic AB term
- female mort schedule too sharp at 15?

## Liberia

- $_{45}q_{15}$  crossing over at the earliest year

## Madagascar

- requires different prior means for the hump component to converge ( $\lambda = 0.003, \delta = 0.2$ , i.e. hard-coded a flat hump)
- wouldn't converge with restricted data
- these priors mean a very flat initial hump, otherwise extreme values for epsilon are returned, possibly due to the very flat mort schedule seen in DHS data.

## Malawi

- requires different initial values ( $\text{init hump.marginal}_{prec} = 0, \rho = 0$ ) *female lambda; male lambda (but possible)*
- unrealistic female  $A > \text{male } A$

## Mali

- unrealistic female  $A$
- female  $\lambda > \text{male } \lambda$
- estimated  ${}_{45}q_{15}$  at early years
- male U5MR lower than WPP/IGME estimates in all years
- over-smoothed humps
- kink in mort schedules over time

## Mozambique

- female  $\lambda > \text{male } \lambda$
- unrealistic  $\psi$  and AB term (coz of the spike in 1985 also seen in GBD estimates?)
- lower male U5MR than WPP/IGME
- need to double check spline estimates whether wiggly

## Namibia

- wouldn't converge with restricted data
- female  $A > \text{male } A$

## Niger

- female  $\lambda > \text{male } \lambda$  at most recent years
- questionable female  $A$
- estimated  ${}_{45}q_{15}$  crossing over at early years
- over-smoothed humps
- unrealistic migration

## Nigeria

- failed to converge with restricted data
- female  $\lambda > \text{male } \lambda$
- wiggly  $\psi$
- female  $A > \text{male } A$
- estimated  ${}_{45}q_{15}$  crossing over at early years
- over-smoothed humps?

## Rwanda

- requires different initial values (init hump.marignal.prec=0, rho=2, marginal.prec=4)
- unrealistic AB term
- estimated epsilon too high?
- WPP U5MR seems unrealistic?

## Senegal

- requires different initial values (init hump.marignal.prec=2, rho=0, marginal.prec=3)
- female U5MR lower than WPP/IGME

## Sierra Leone

- requires different initial values (init hump.marignal.prec=2, rho=0, marginal.prec=3)
- failed to converge with restricted data
- messy results
- double check with spline estimates, see if wiggly over time as well?

## South Africa

- migration wonky
- deviation from initial fert values are large
- ${}_{45}q_{15}$  consistently lower than GBD/WPP

## Tanzania

- female  $A > \text{male } A$

## Togo

- requires different prior means for the initial hump ( $\lambda = 0.003$ ,  $\delta = 0.3$ , i.e. flat hump)
- female  $\lambda > \text{male } \lambda$
- wiggly AB term

## Uganda

- AB term
- restricted data fails to converge

## Zambia

- female  $A > \text{male } A$
- AB term wiggly
- female estimated  ${}_{45}q_{15}$  at the earliest year questionable

## Zimbabwe

- female  $A > \text{male } A$