

- Tried to use 2nd diff penalties for child and old age components, and use 1st diff and 2nd diff and 1e-3 on diagonal for hump component
 - much harder to converge, a lot of countries failed
- Decomposed into null space and random effects

$$\beta_i = a + b i + \mathbf{D}'(\mathbf{D}\mathbf{D}')^{-1}\epsilon$$

where

$$\epsilon \sim N(0, \sigma^2 \mathbf{I}_{K-2})$$

- don't think using a 2nd diff penalty changes the smoothness much?
- use RW1 but use larger spacing knows in time for mx parameters?