KOSTAT-UNFPA Summer Seminar on Population

Workshop 1: **Demography in R**

Population structure

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Workshop plan, July 24-28, 2023

1: Monday Intro concepts, and R setup

2: Tuesday Mortality and fertility

3: Wednesday Structure

4: Thursday Growth

5: Friday Projection

Review of session 2

- Period synthetic cohorts
- Lifetable deaths versus observed deaths
- Weighted averages (e0, MAB)
- Function-writing:

```
new_name <- function(arguments){
  # code that does stuff
  return(result)
}
```

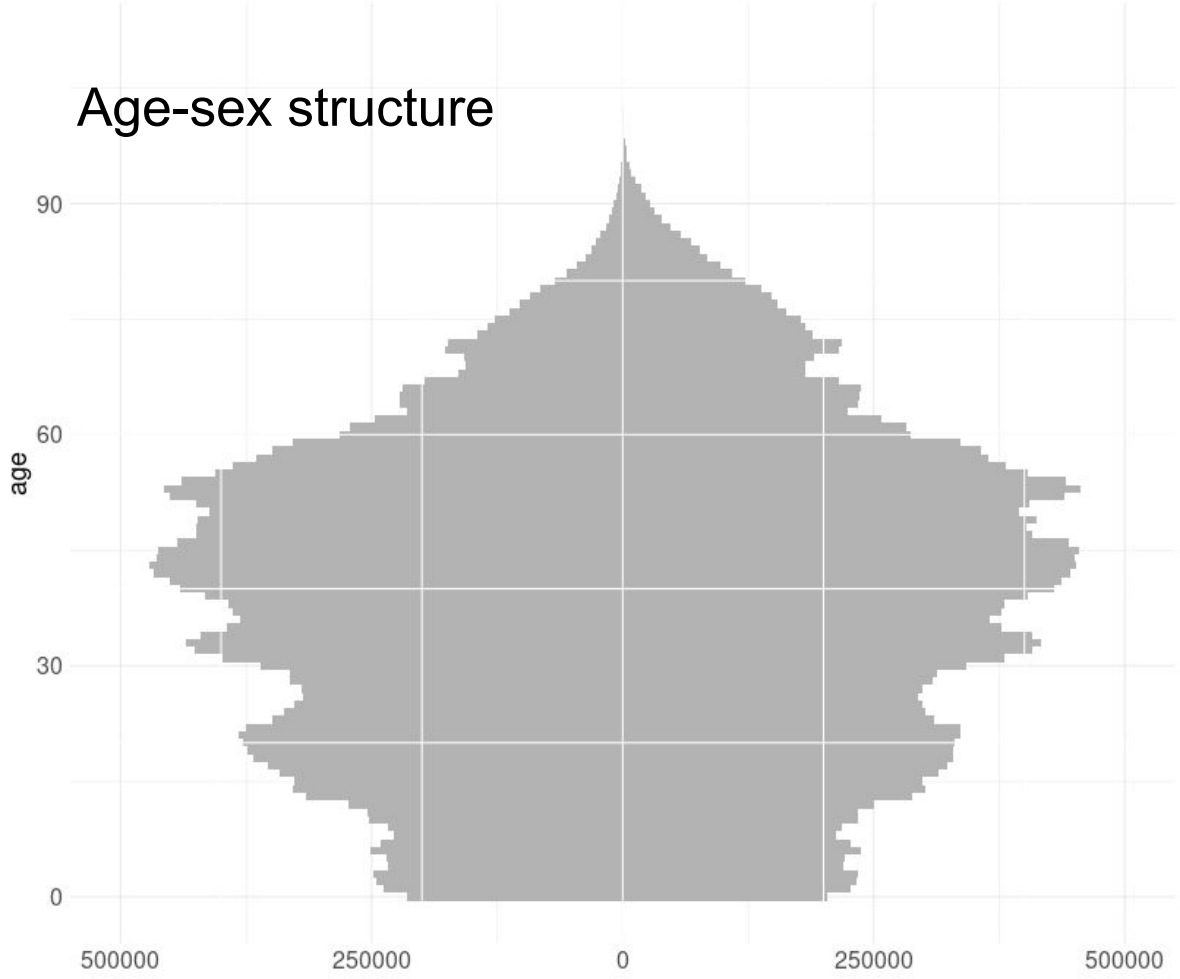
- Grouped data

```
group_by() |>
```

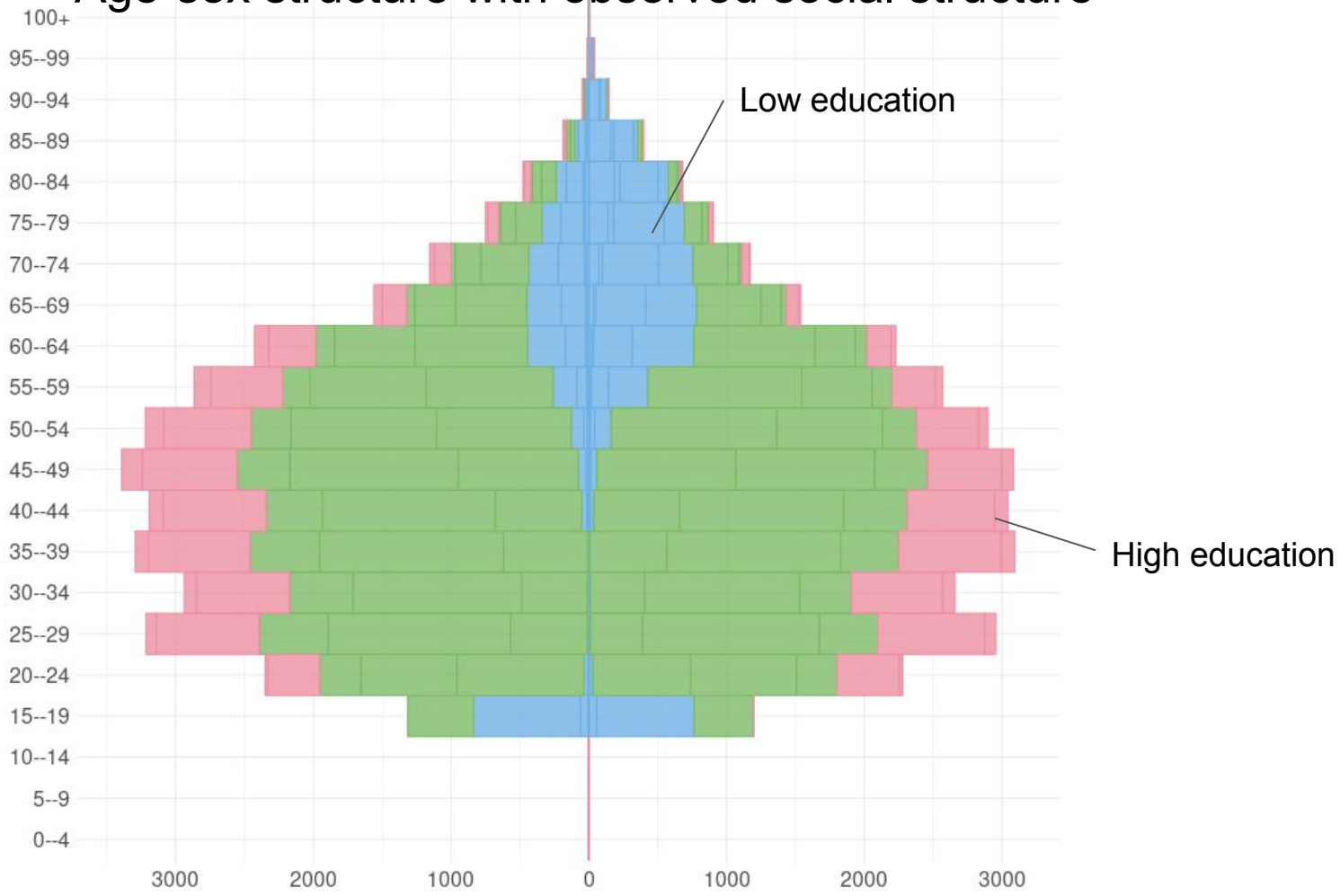
Structure

- Population subsets, usually exclusive strata (sex, location, status, etc)
- Risk categories within populations considered together, such as age, health, or otherwise blended populations
- Unobserved structure (e.g. underlying frailty, remaining time-to-death, social advantage)

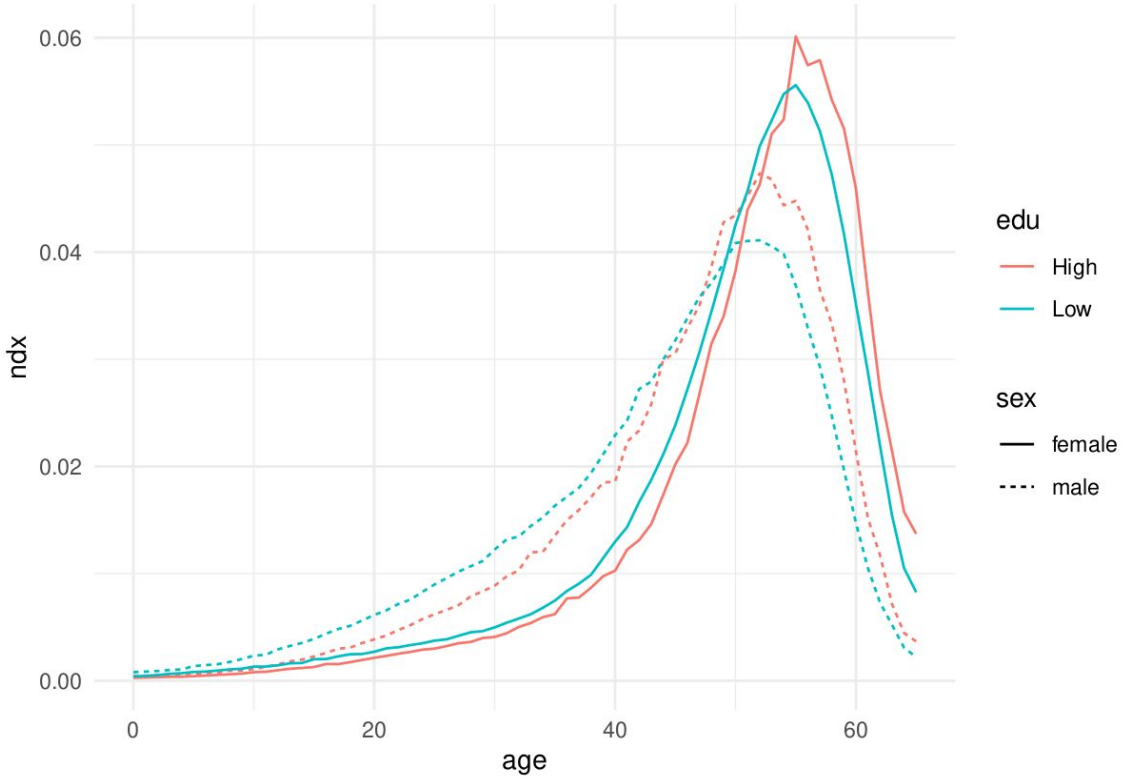
Age-sex structure



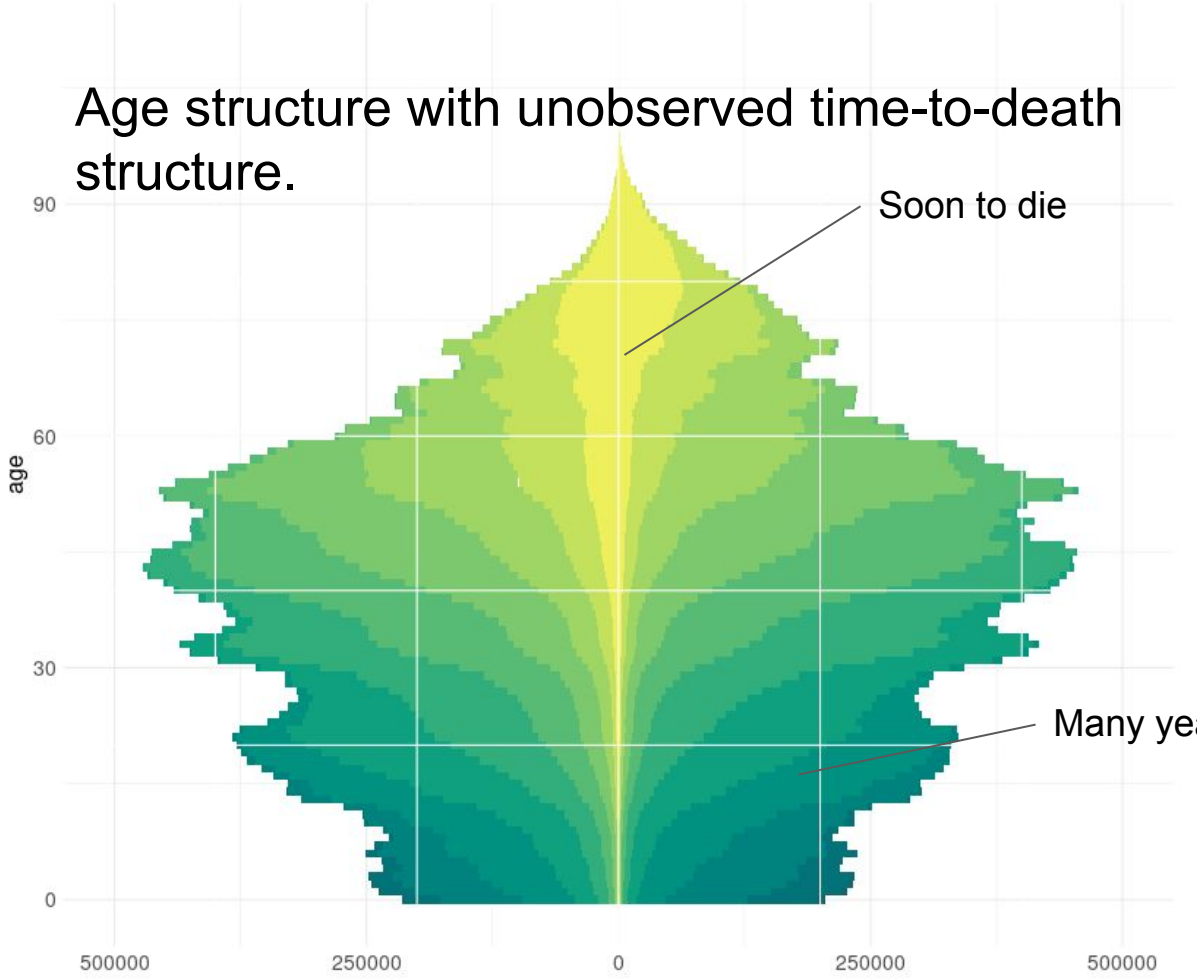
Age-sex structure with observed social structure



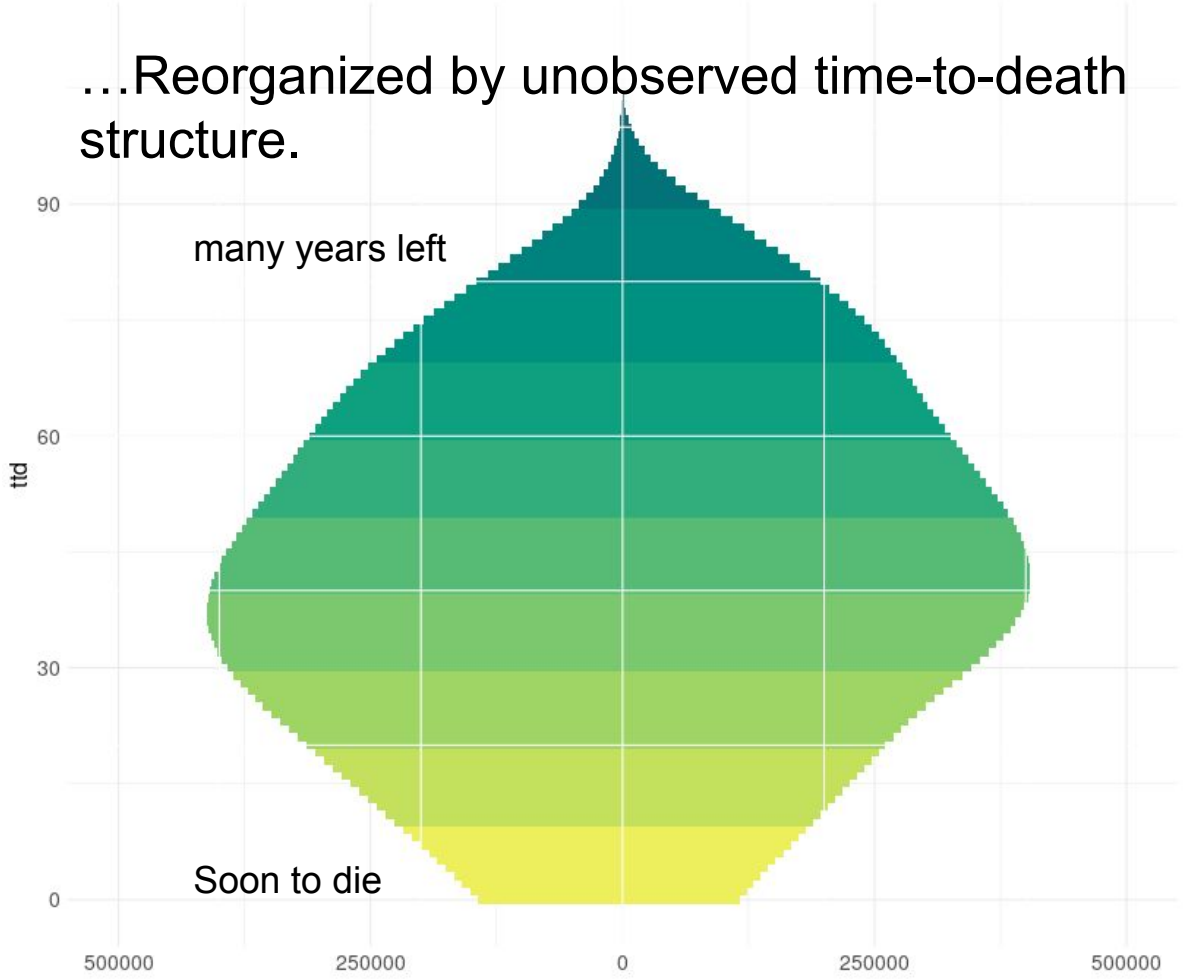
Age-sex structure to reveal inequalities



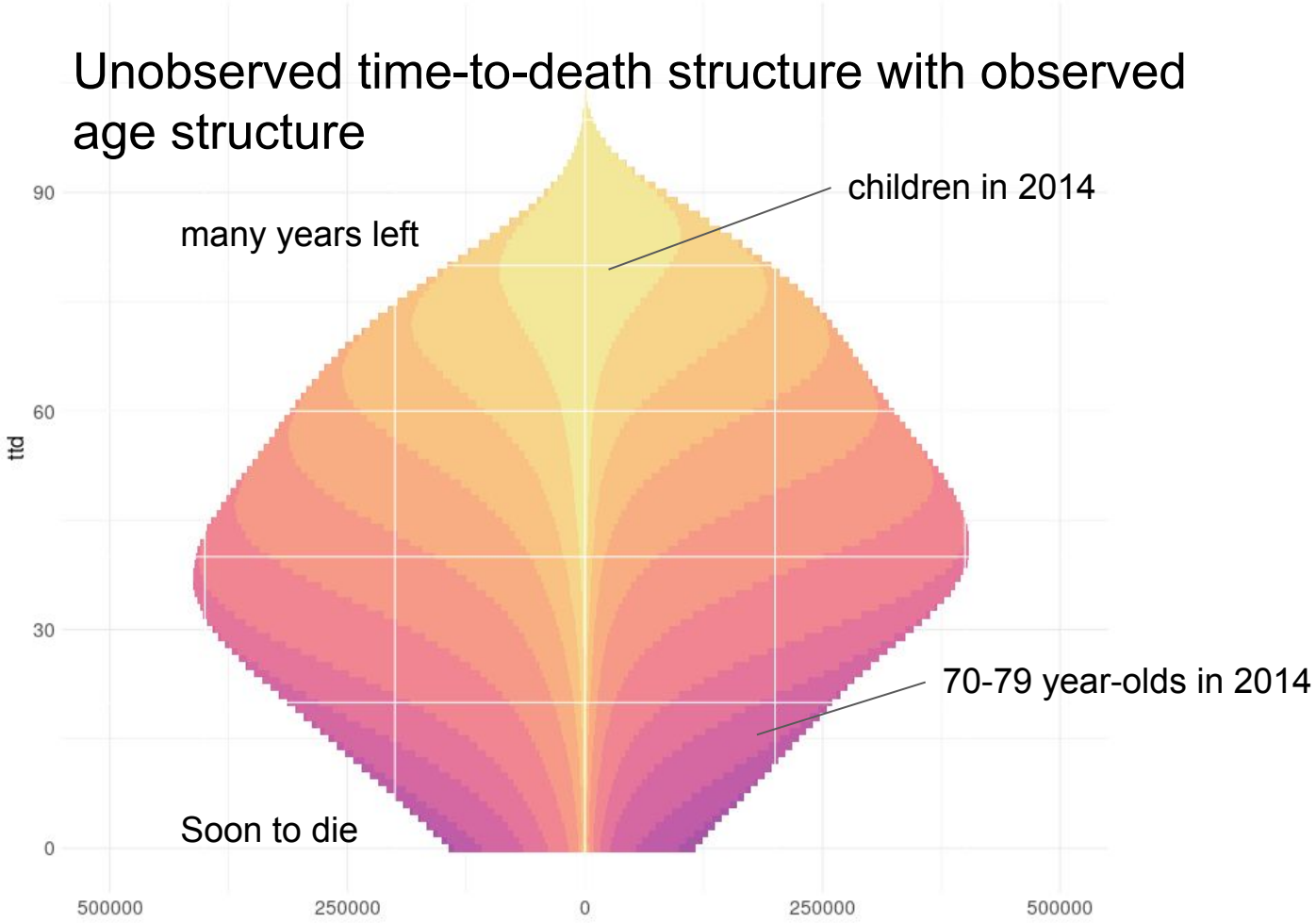
Age structure with unobserved time-to-death structure.



…Reorganized by unobserved time-to-death structure.



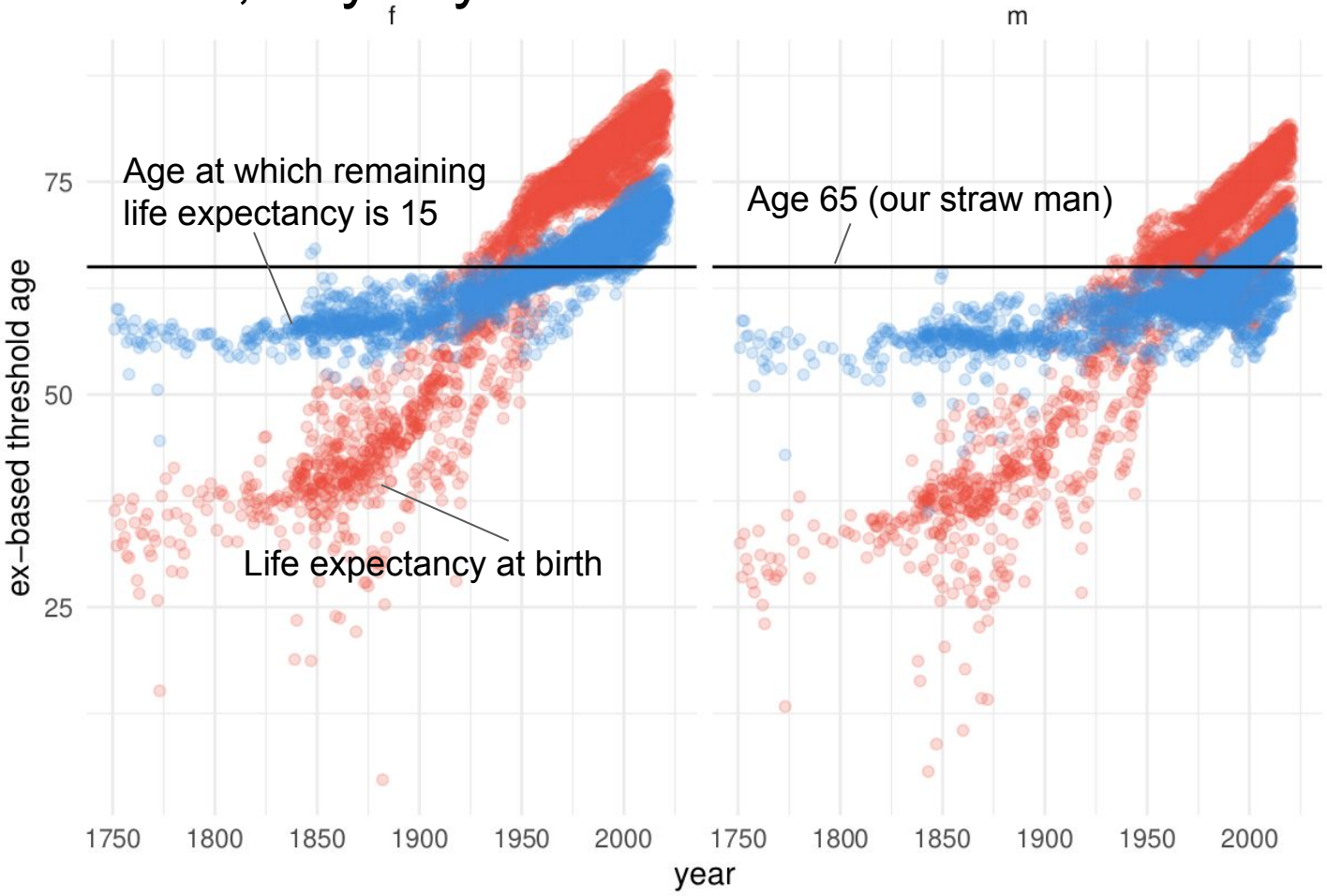
Unobserved time-to-death structure with observed age structure



What is old, anyway?

- What if we say old starts at the age where remaining life expectancy drops to 15 or similar?
- Or what if we say old starts when only 20% of a cohort remains alive?

What is old, anyway?



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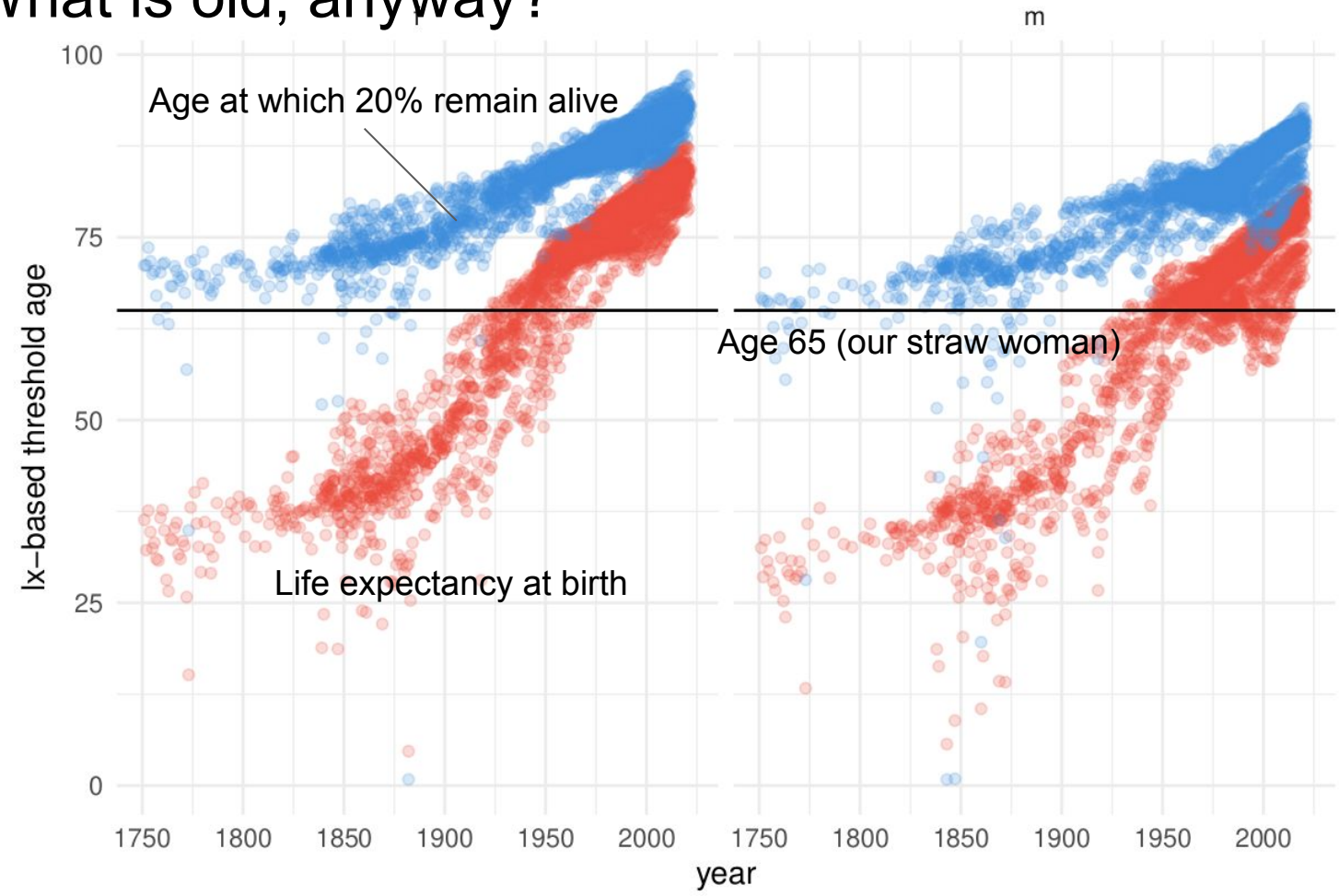

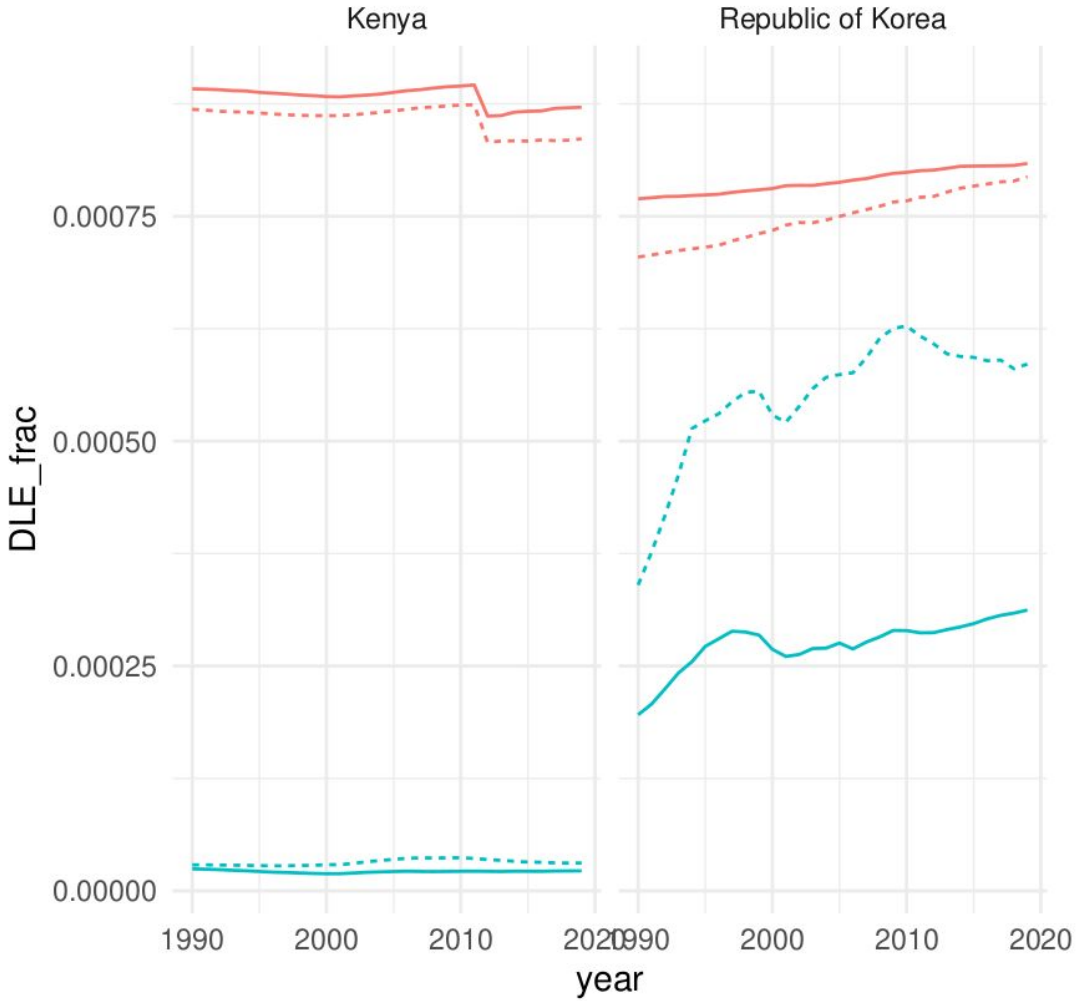

Different measures =
Different “burdens”

sex
Female
Male

cause
Seborrhoeic dermatitis
Stomach cancer

Structure

- measure inequality vs
- control for heterogeneity?
- Fixed versus transient structure
- Observed and unobserved structure
- Structure and the lifecycle