Alignment, Clocking, and Macro Patterns of Episodes in the Life Course

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- How do parity-specific birth interval distributions vary by completed fertility or in response to birth outcomes?

Solution

We develop a framework (or grammar) of data operations to flexibly derive aggregate patterns from trajectory data.

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Approach

Clocks are within and between episode timekeeping operations.

Alignment is a time structuring operation.

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Clocks

Within episodes of state **s**, count time steps or episode order up or down, or total episode duration conditional on time of episode entry, exit, or neither.

Approach

Alignment

left, right, center, etc. on the first, last, longest, shortest, n^{th}, n^{th} from last episode of state **s**.

Requisites

Trajectory data

A set of either observed or simulated time series of discrete time steps consisting in categories.

Illustrations

10 lives simulated from Dudel & Myrskylä (2017)

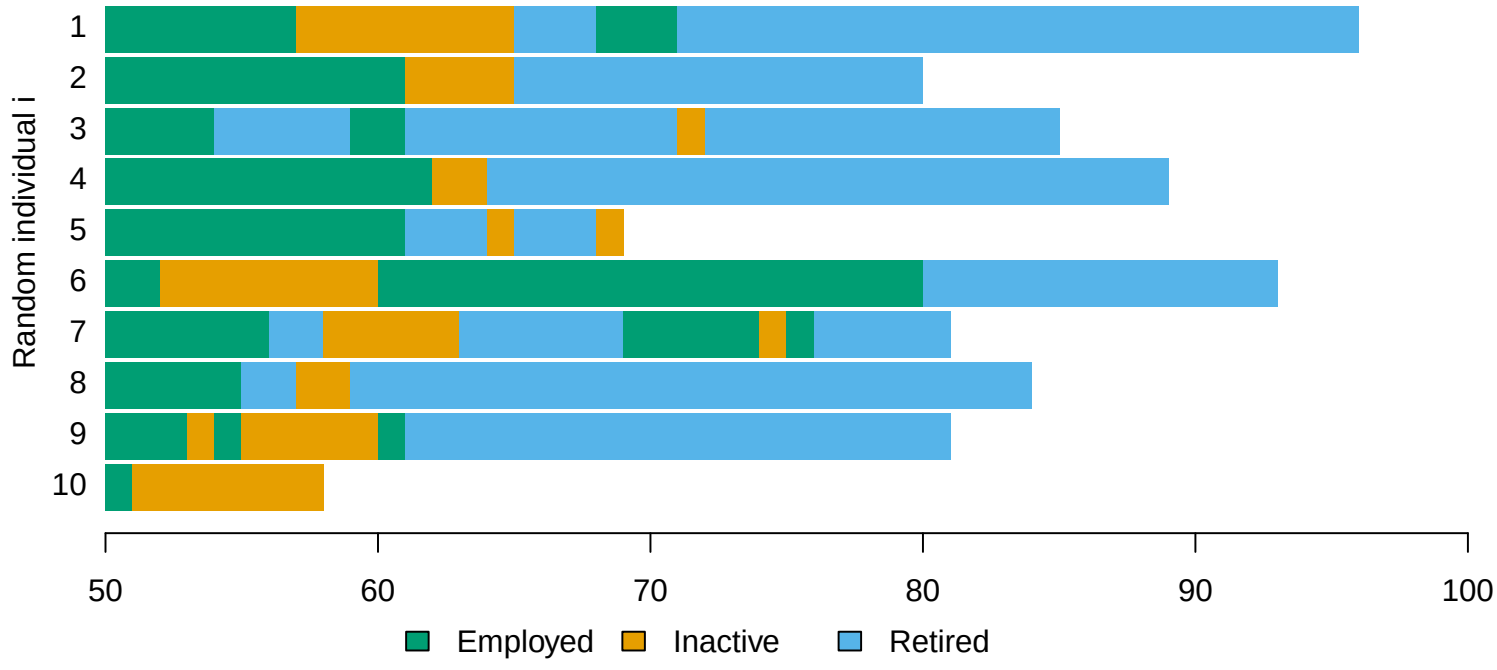


Illustration: Age structured prevalence.

Identity clock in employment state

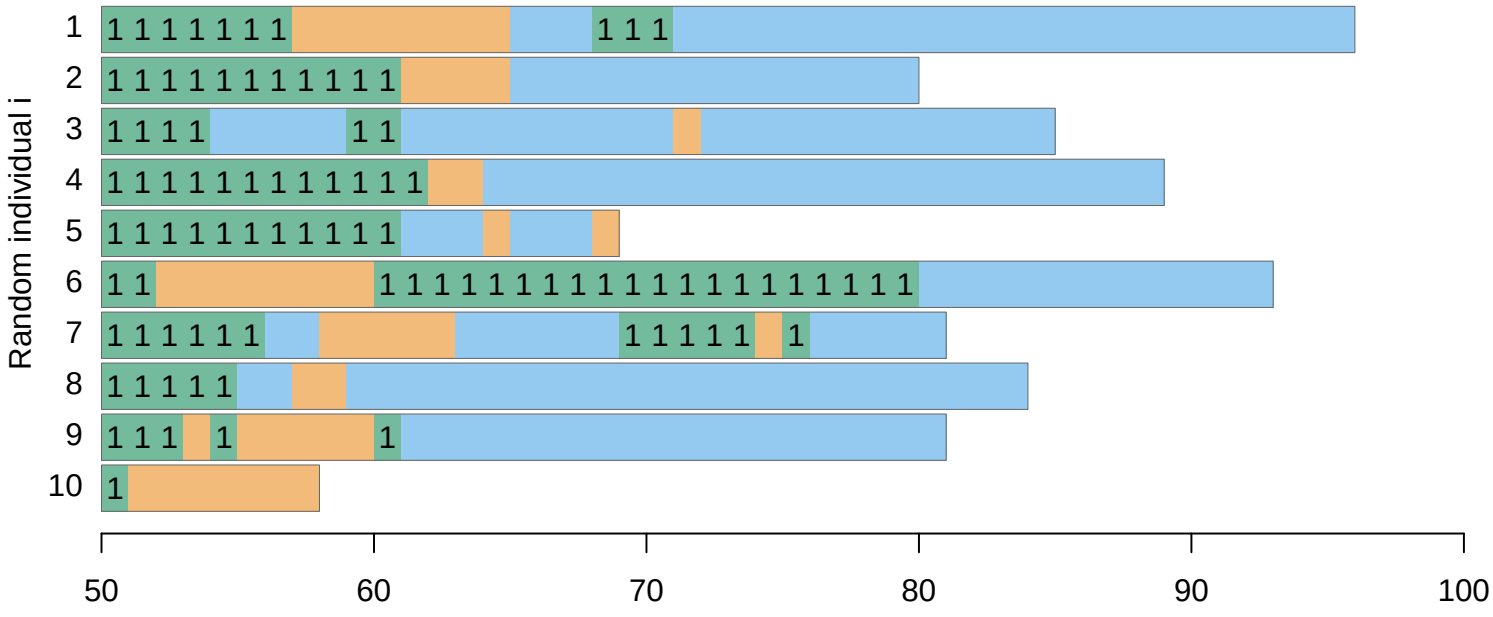


Illustration: Age structured prevalence.

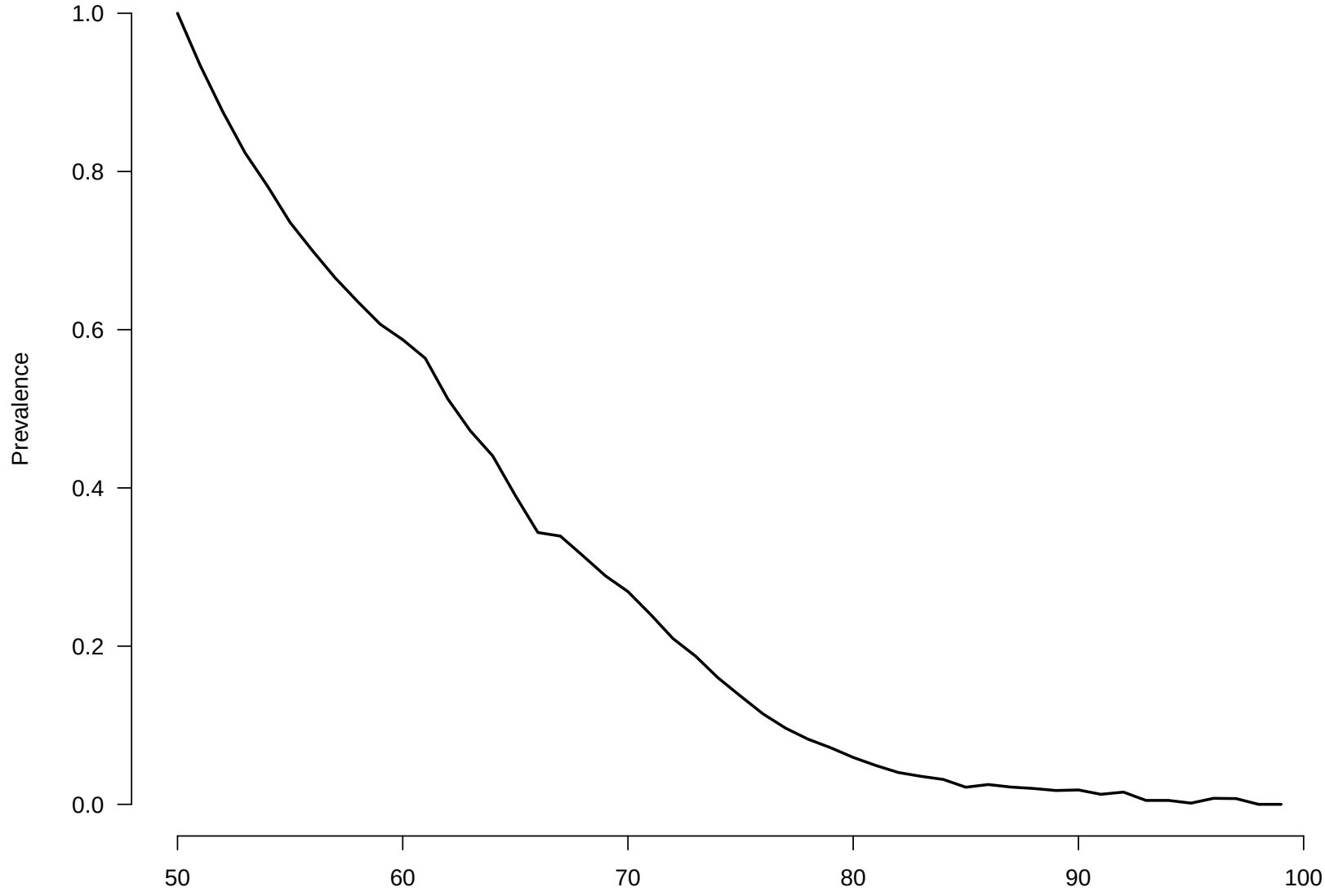


Illustration: Clocks: Duration (unconditional)

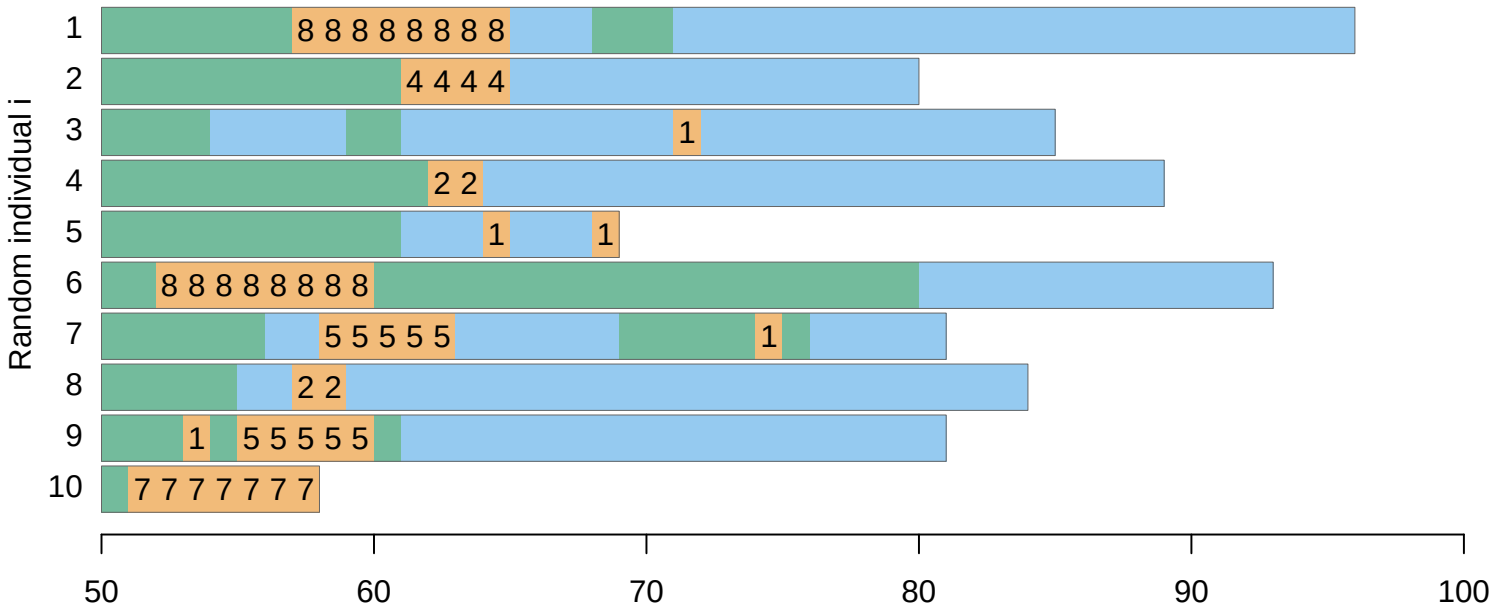


Illustration: Clocks: Duration conditioned on entry

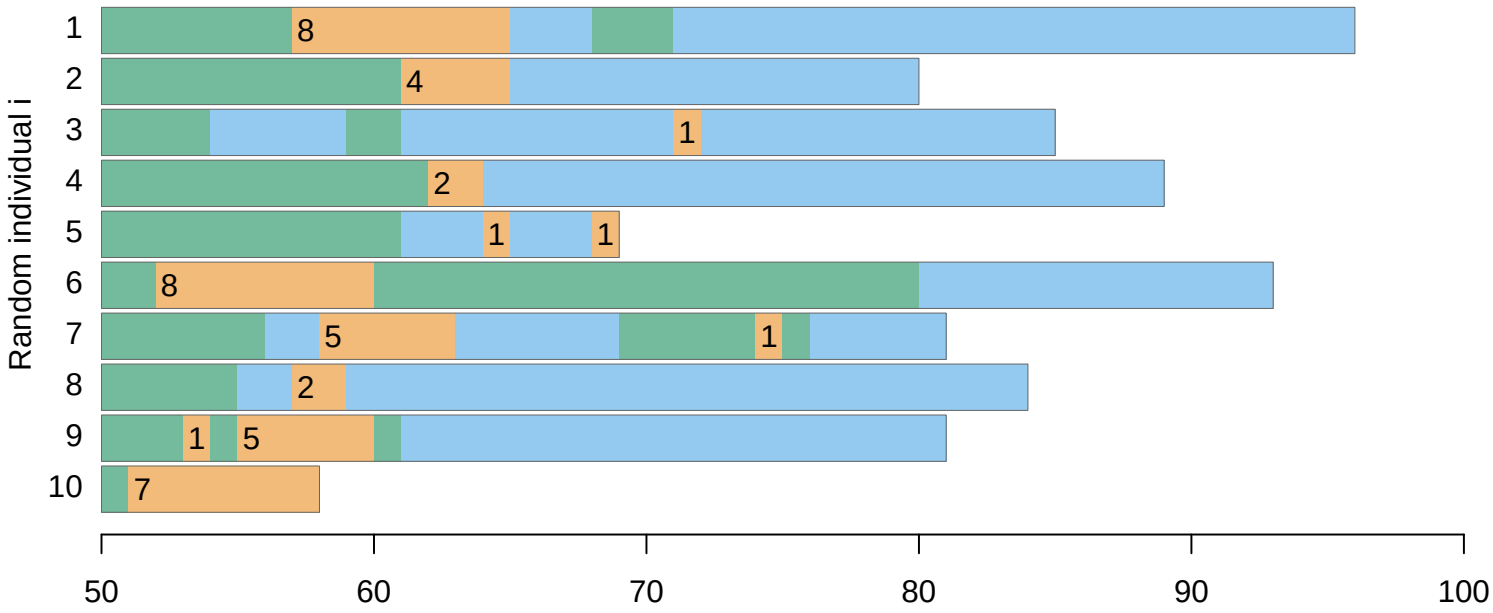


Illustration: Clocks: Duration conditioned on exit

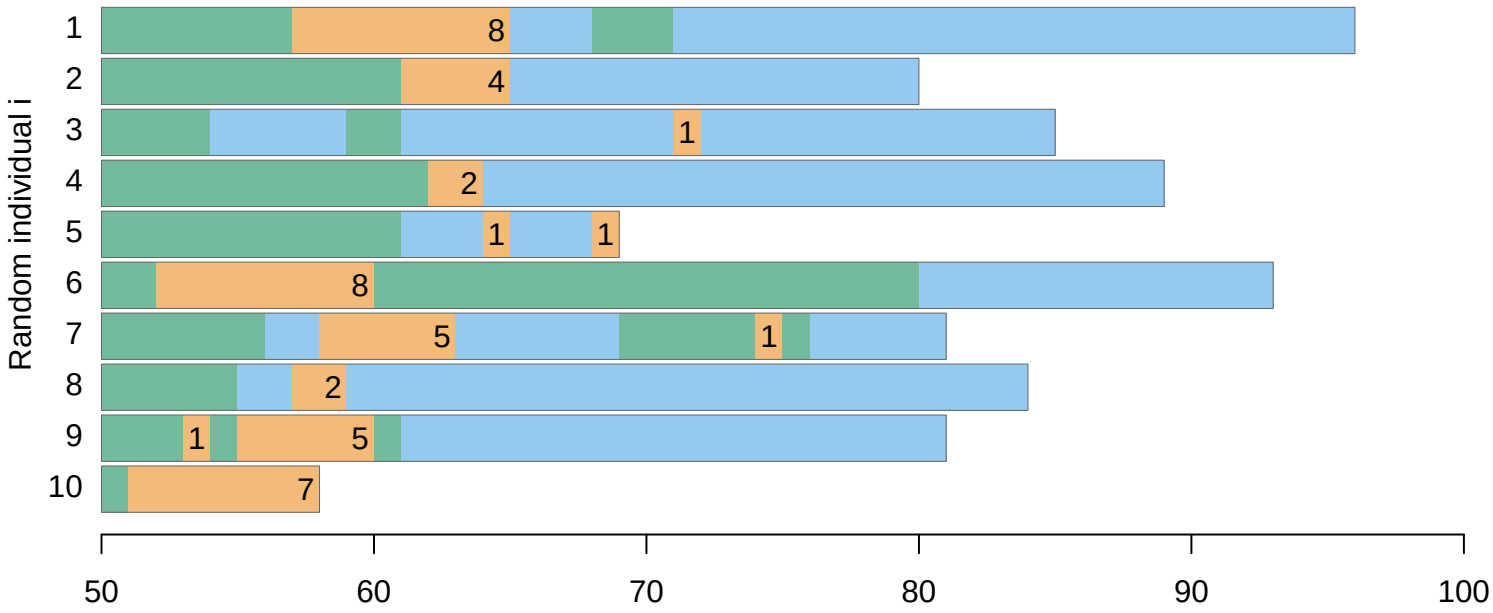


Illustration: Clocks: Order Ascending

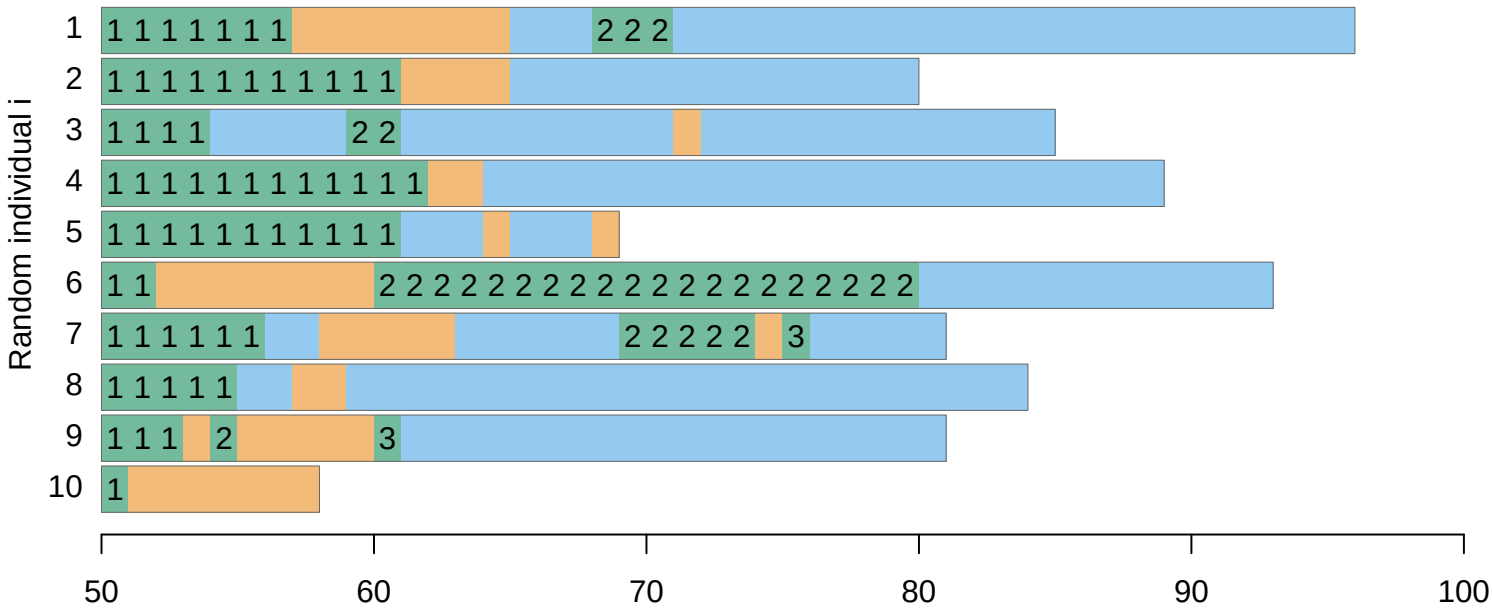


Illustration: Clocks: Order Descending

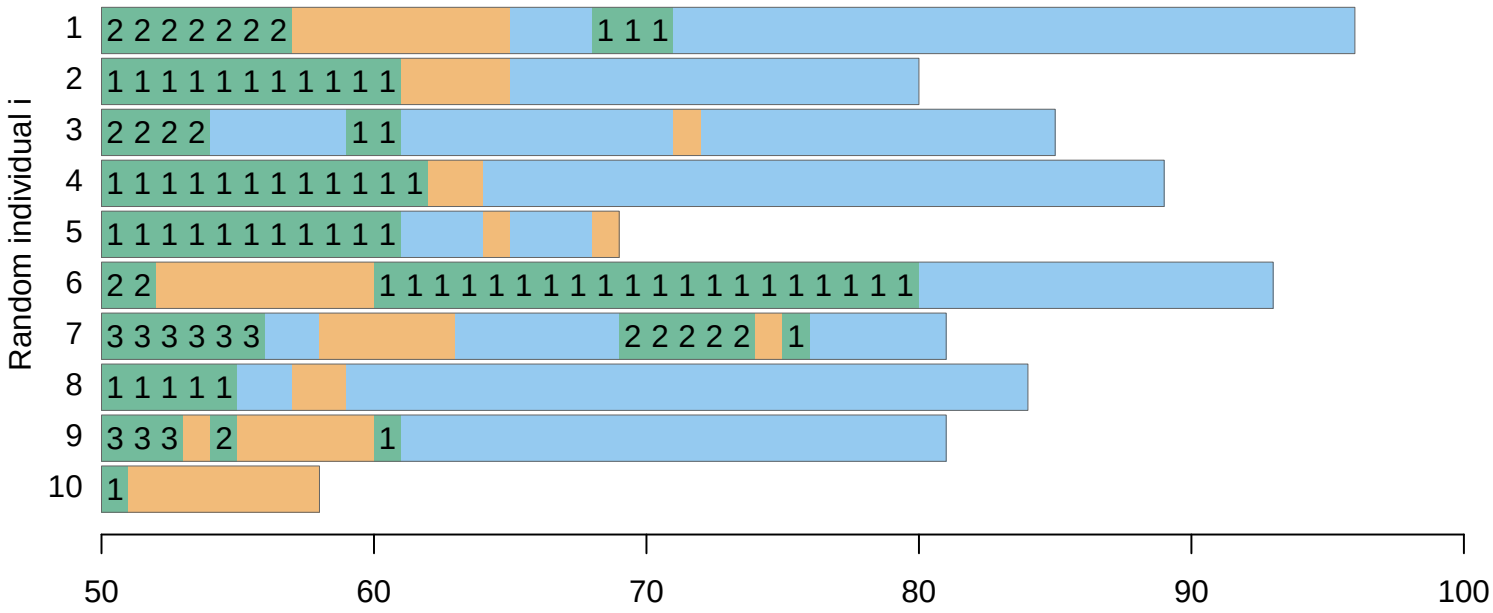
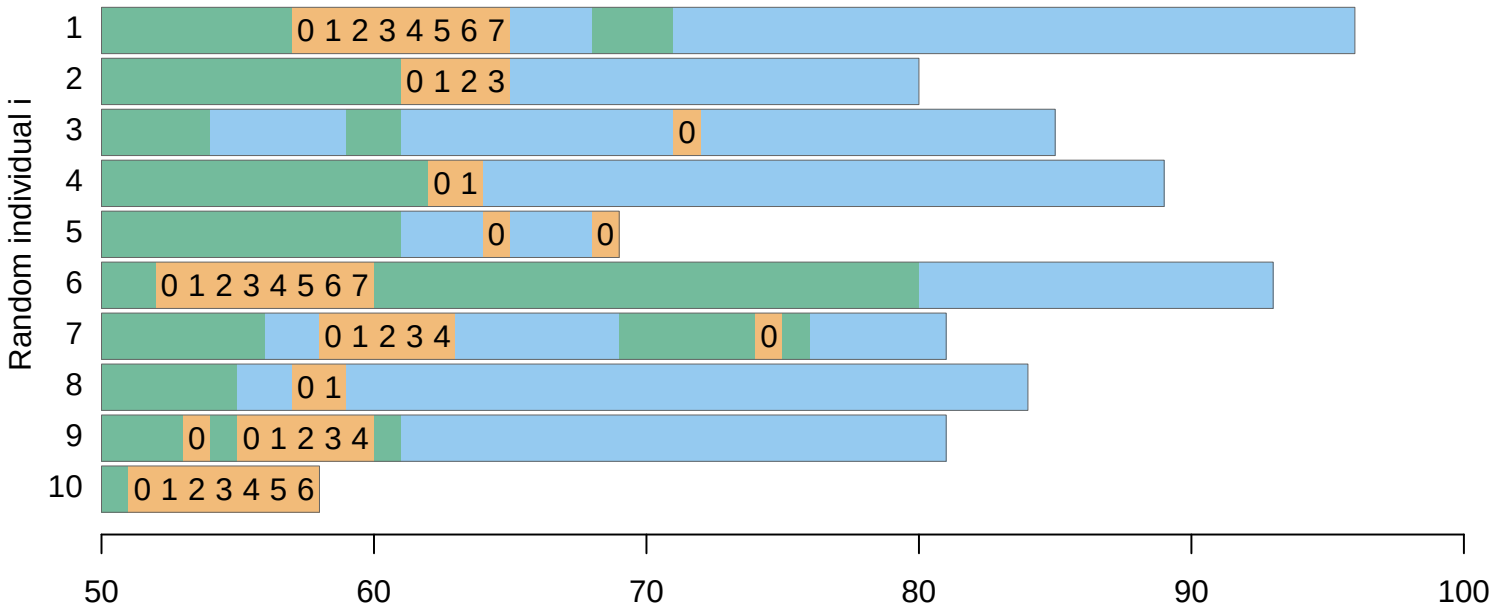


Illustration: Clocks: Steps Ascending



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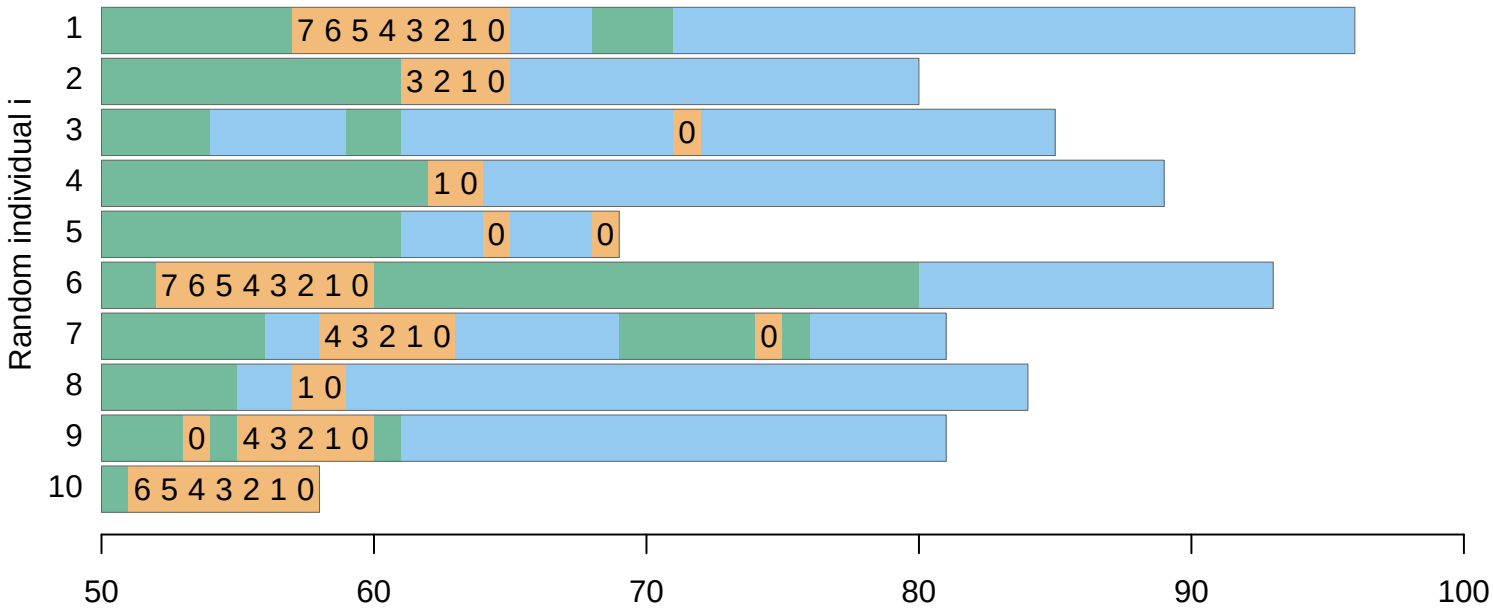


Illustration: Alignment: Age = Birth alignment

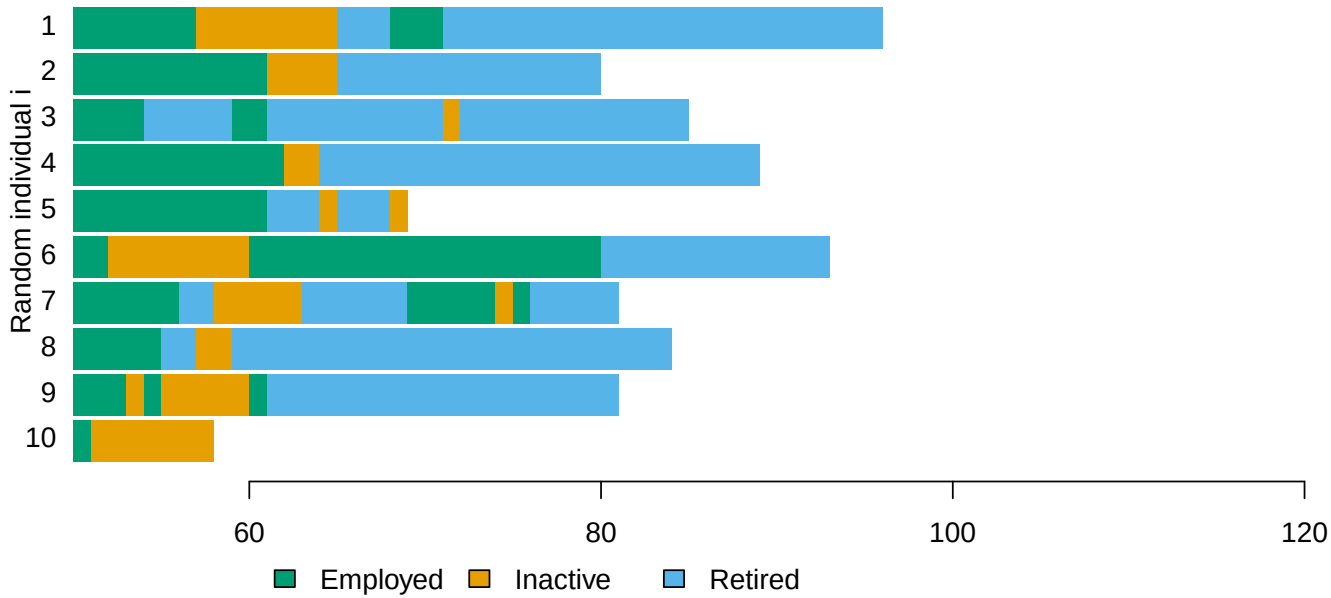


Illustration: Alignment: Death

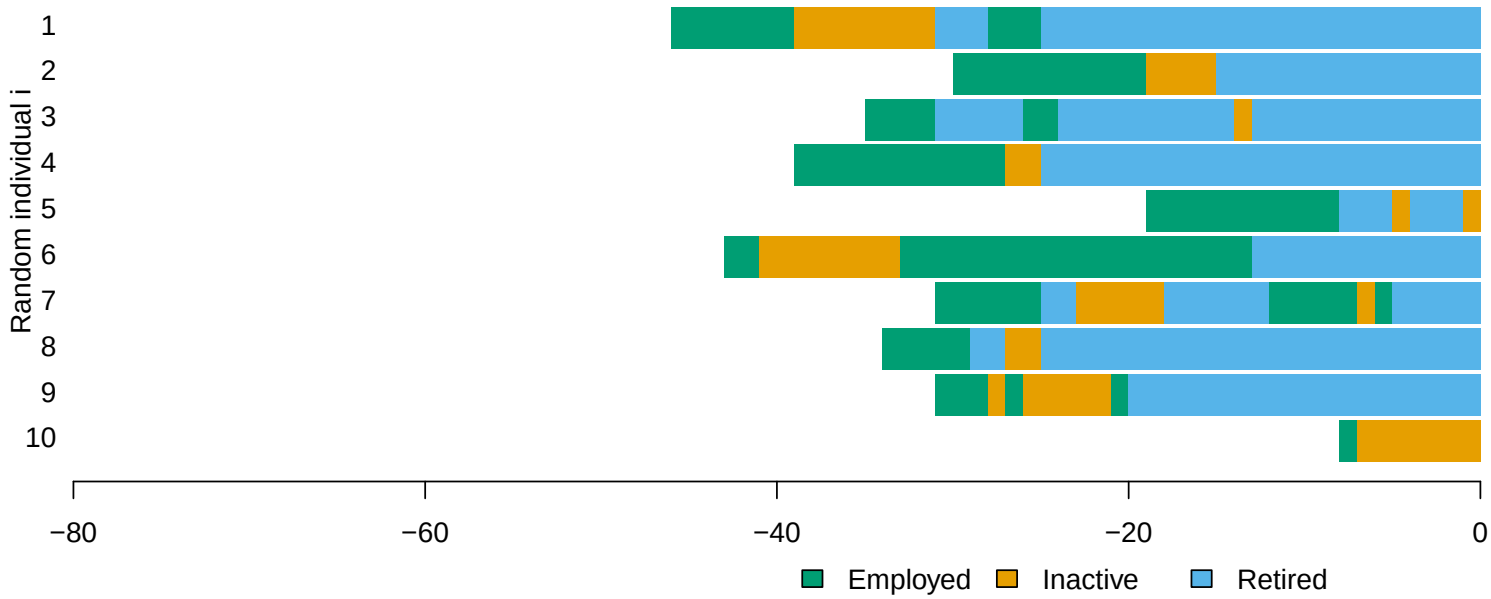


Illustration: Alignment: *Entry* to *first* retirement

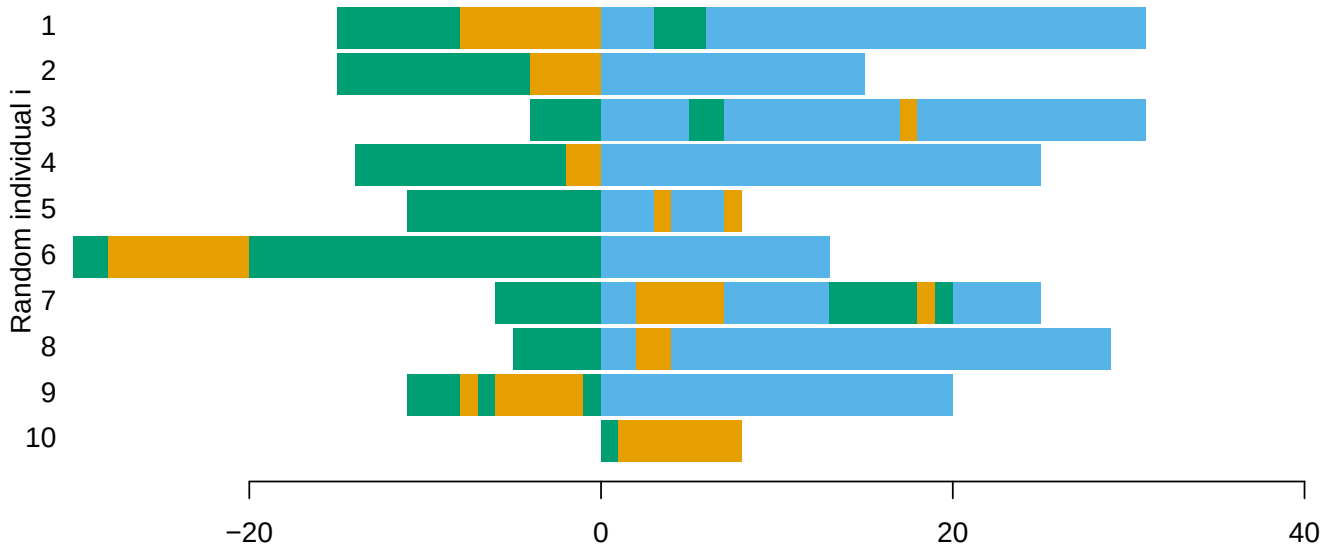


Illustration: Alignment: *Exit* from *first* employment

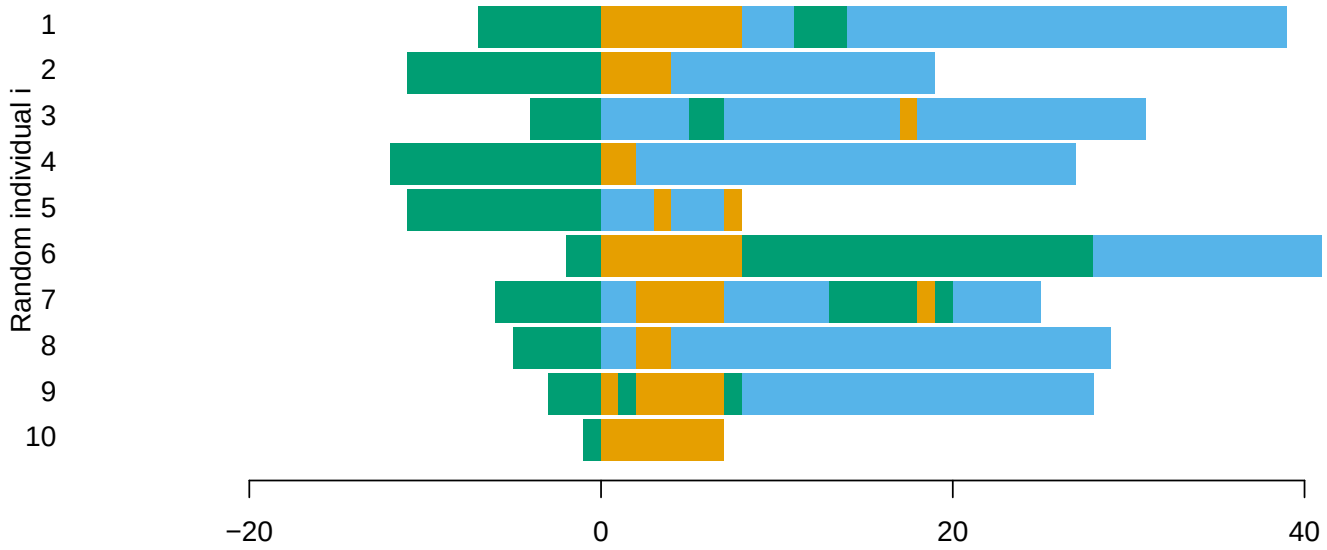
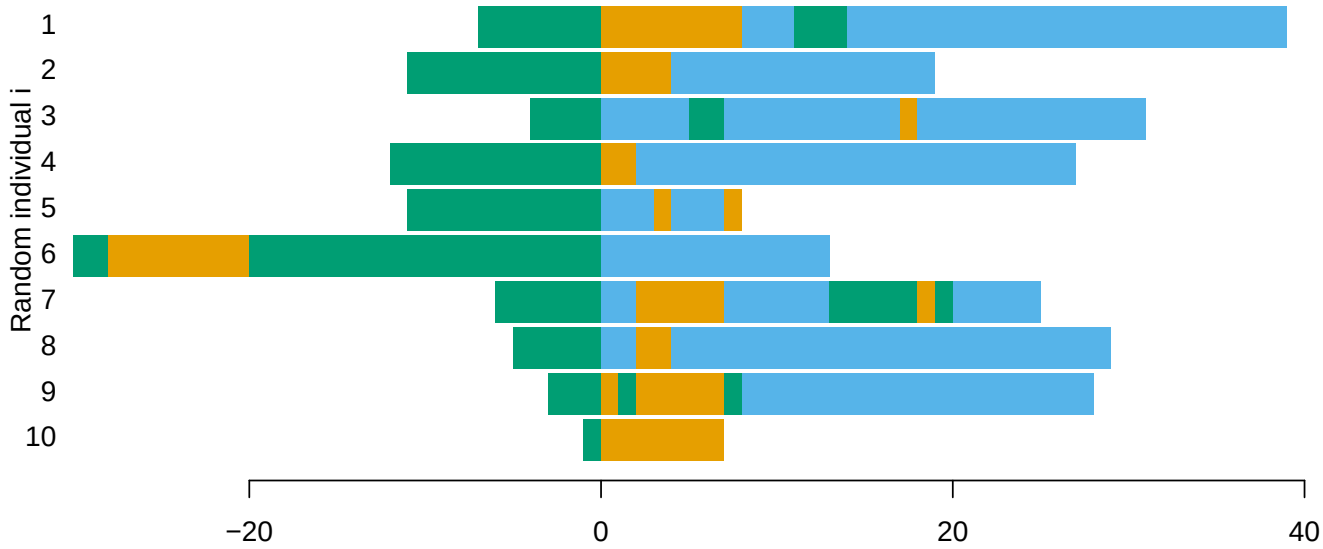


Illustration: Alignment: *Exit* from *longest* employment

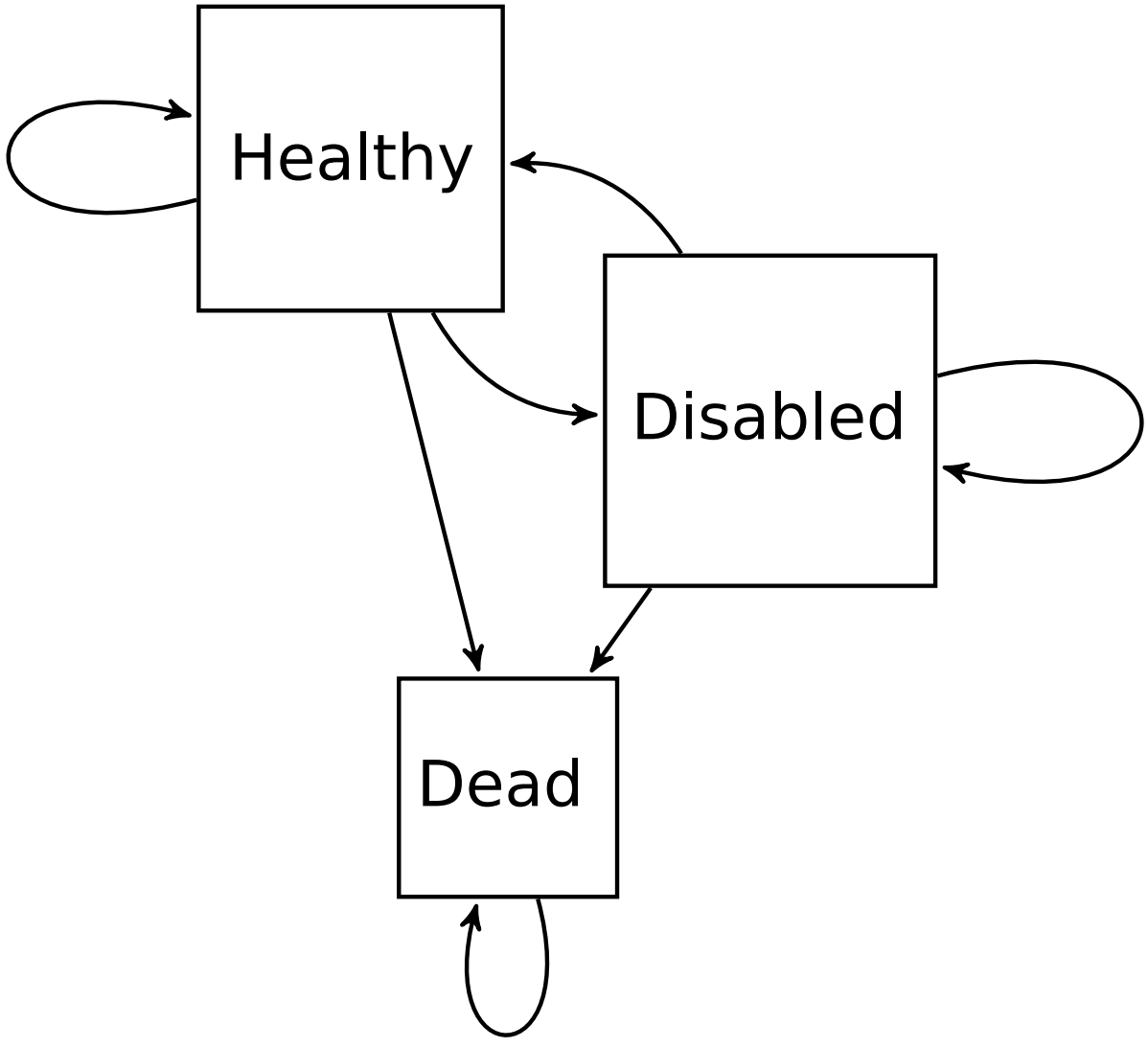


Aggregation

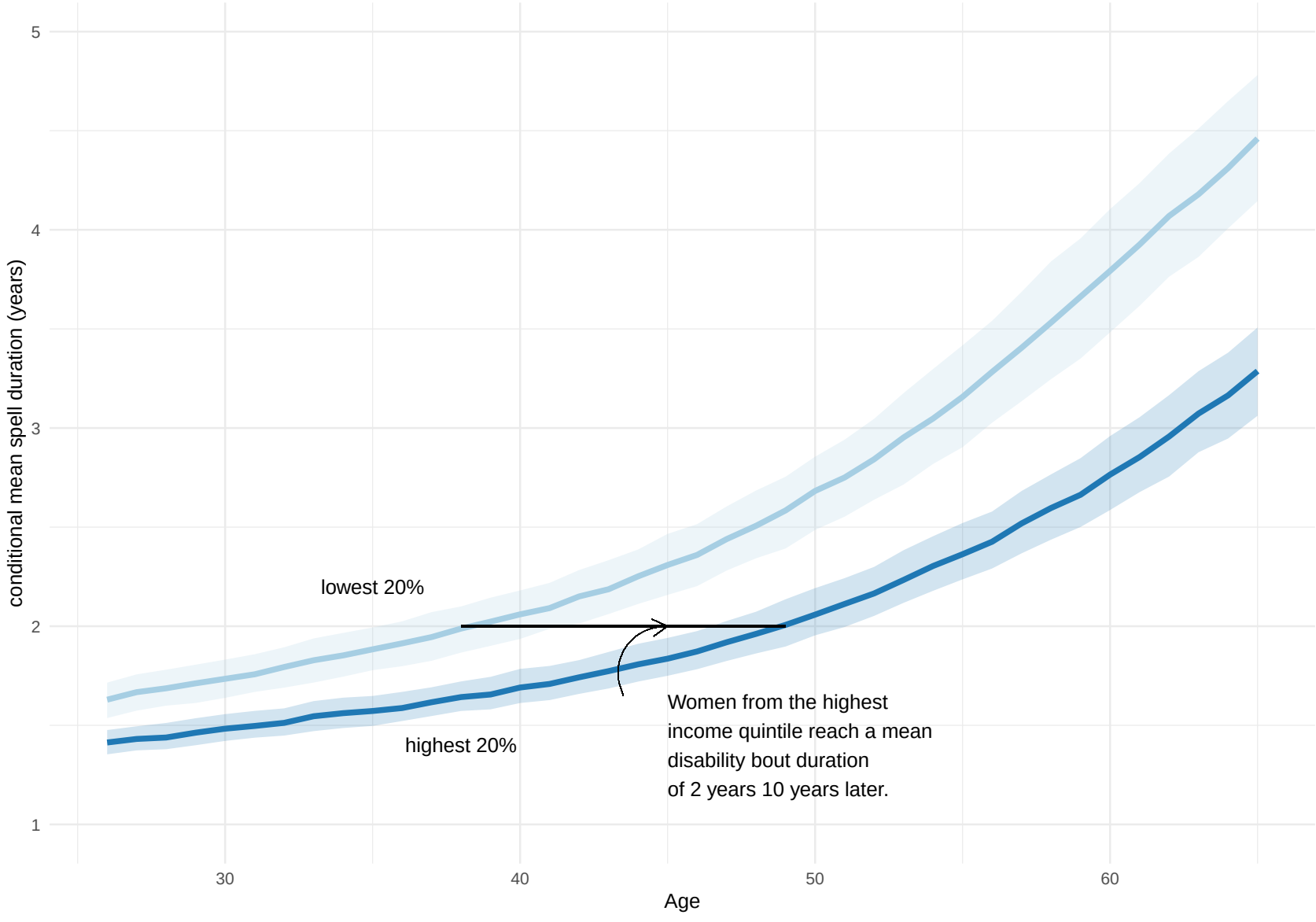
Macro patterns

Combine clocks and alignment to aggregate (e.g. means, quantiles)

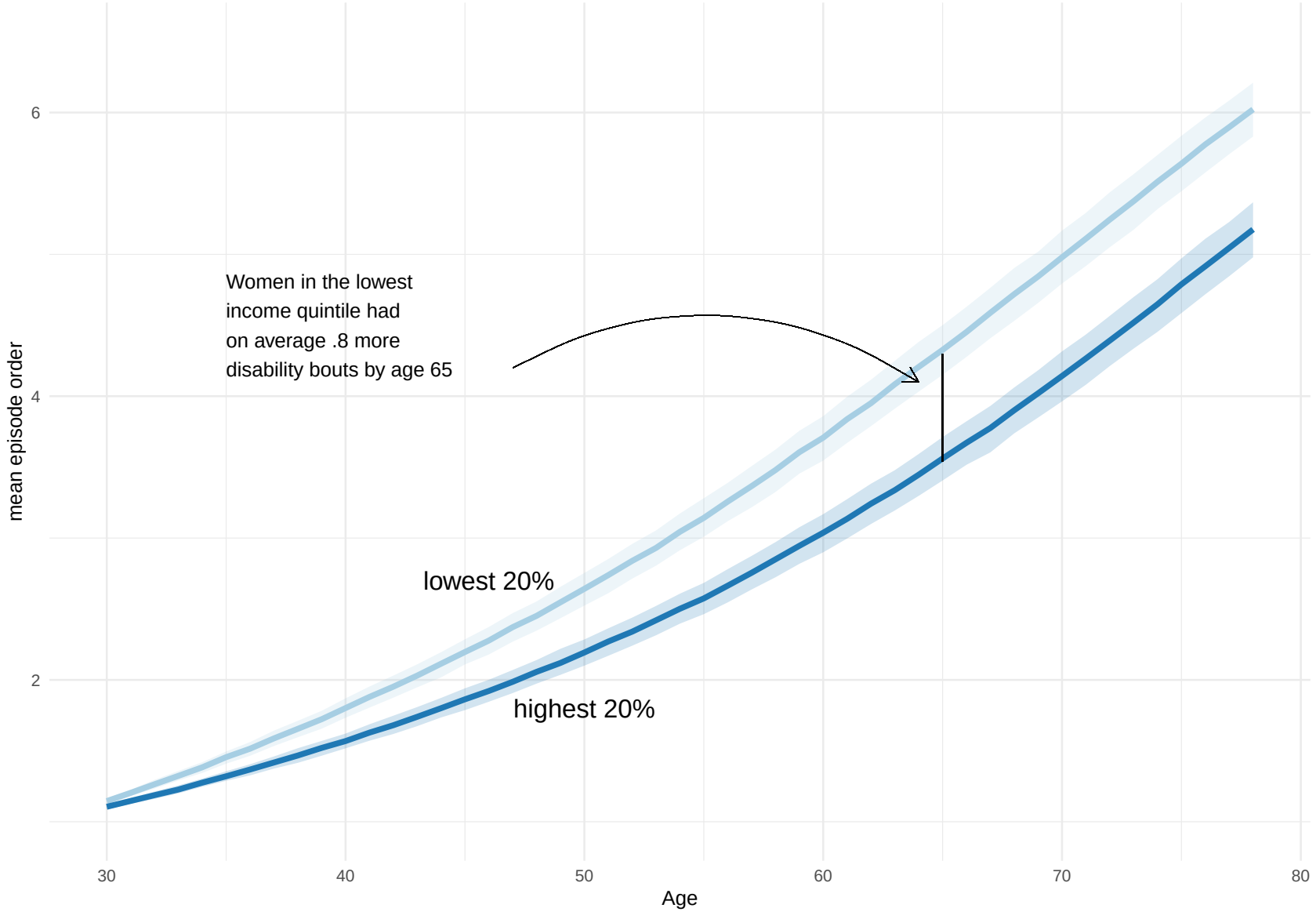
A Health Application



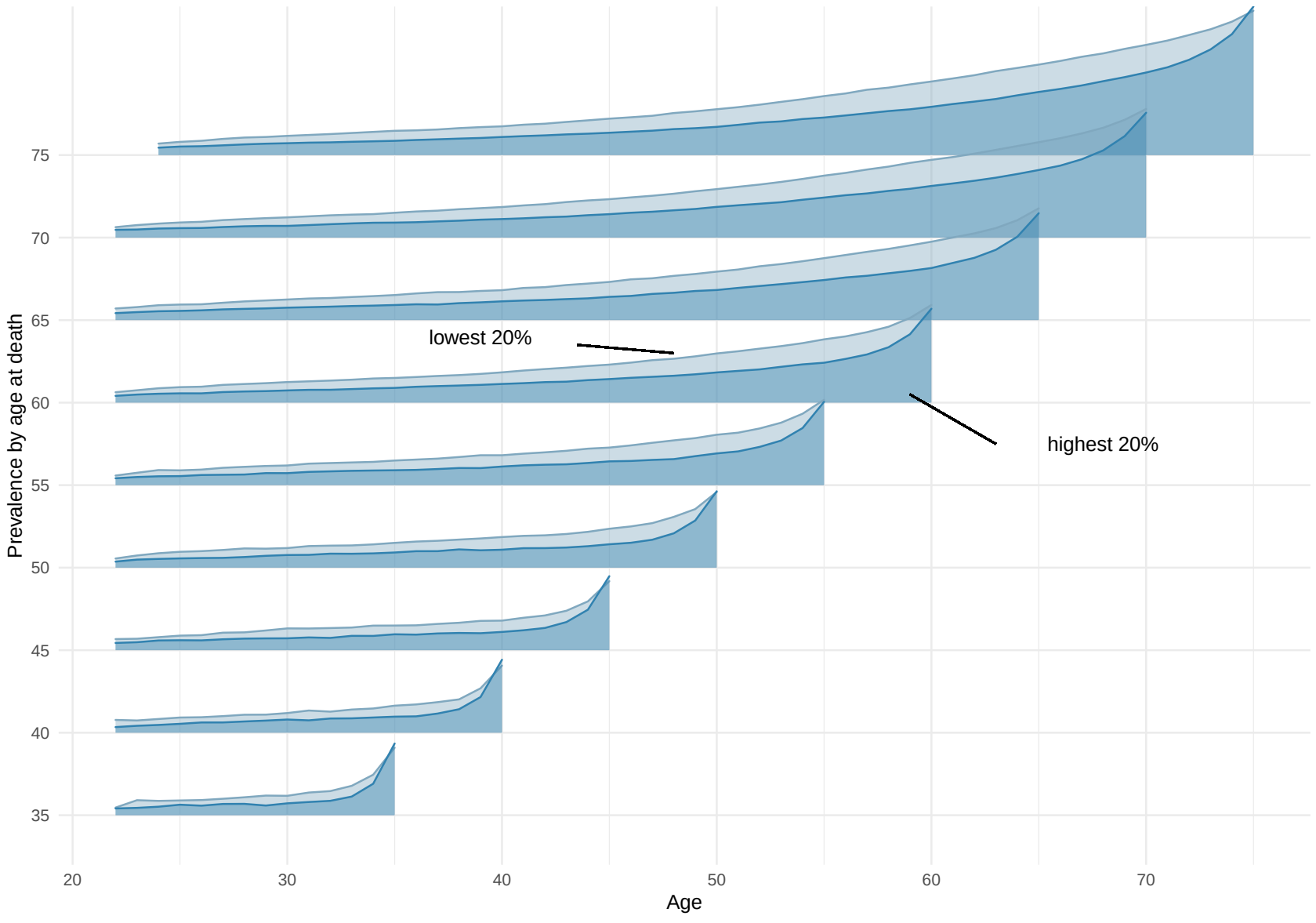
Inequality in disability spell duration



How many times have people been disabled?



Inequality in end-of-life disability levels and dispersion



Conclusions

- Help pose and answer questions
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