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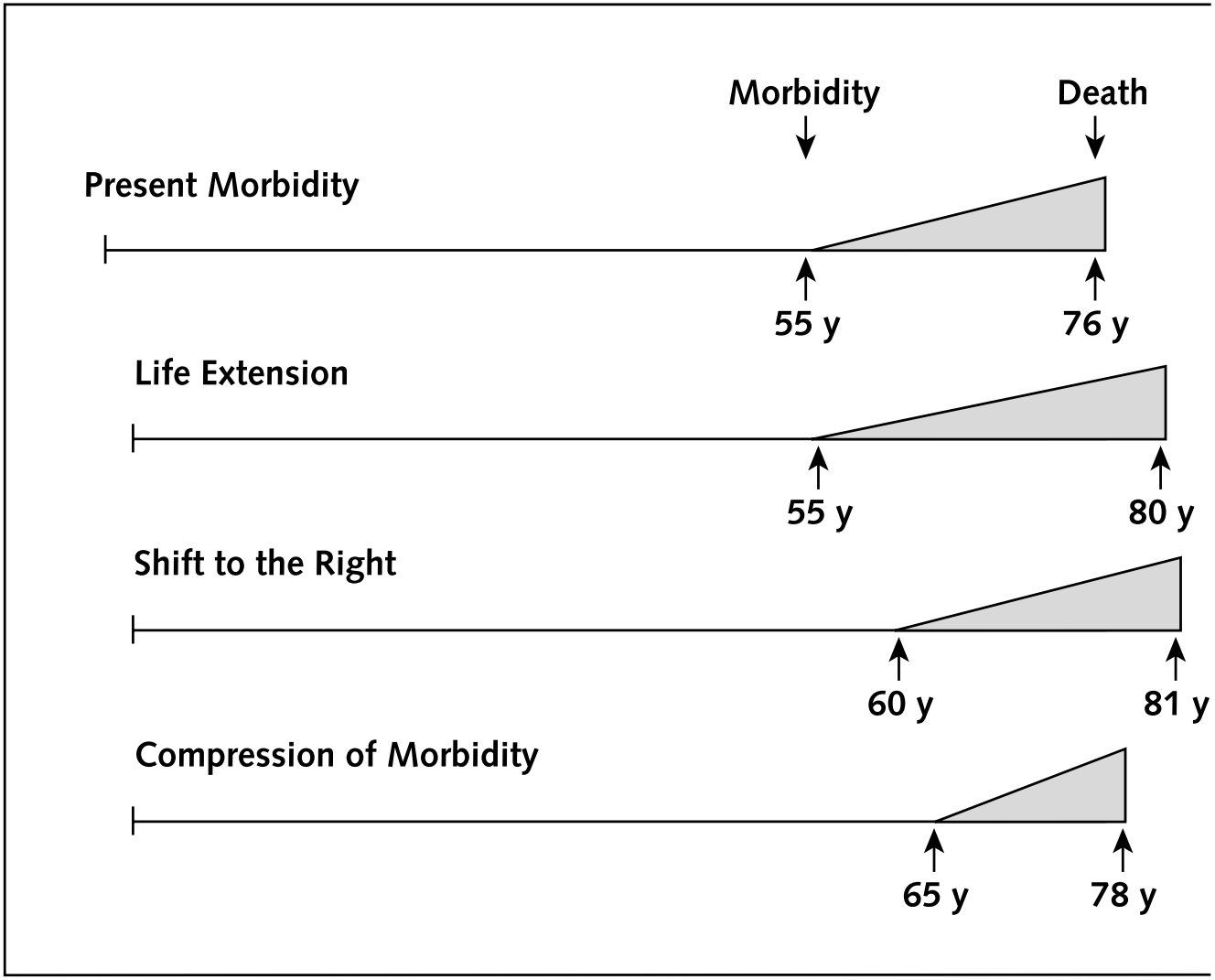
Morbidity concentration and dispersion

Tim Riffe, Aïda Solé Auro, Maarten J. Bijlsma

Fries' diagrams are a nice prop

Figure 1. **Possible scenarios for future morbidity and longevity.**



Pattern indifference within lifespan

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Patterns matter if lifespans are mixed

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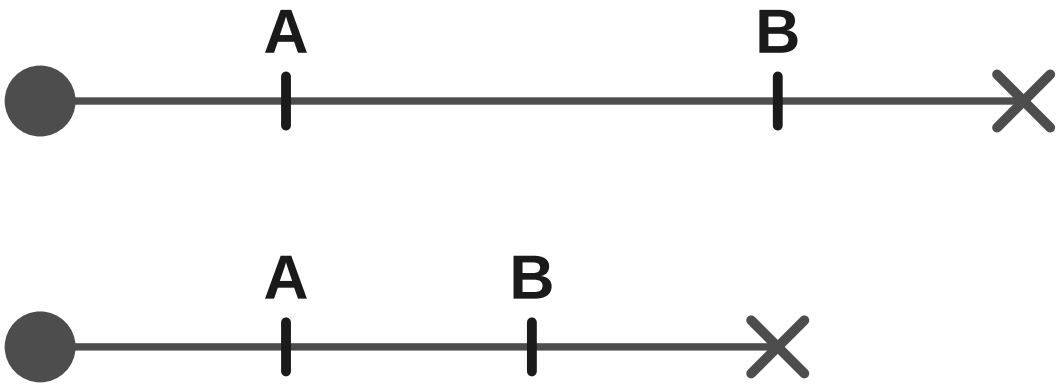

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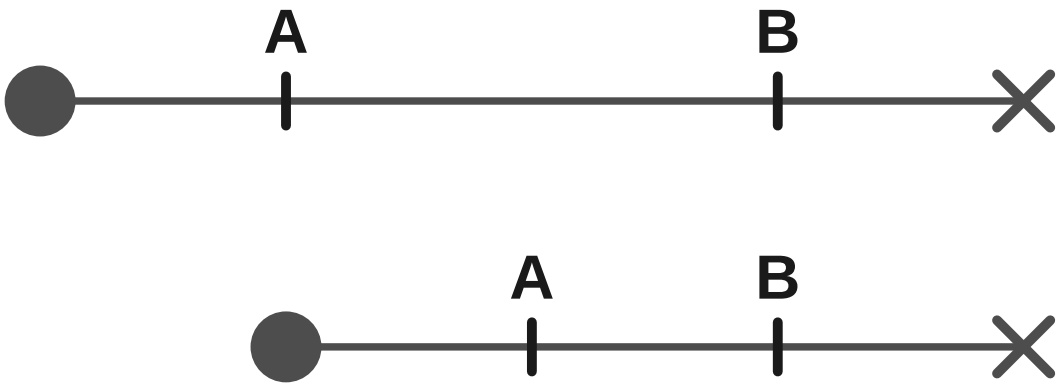

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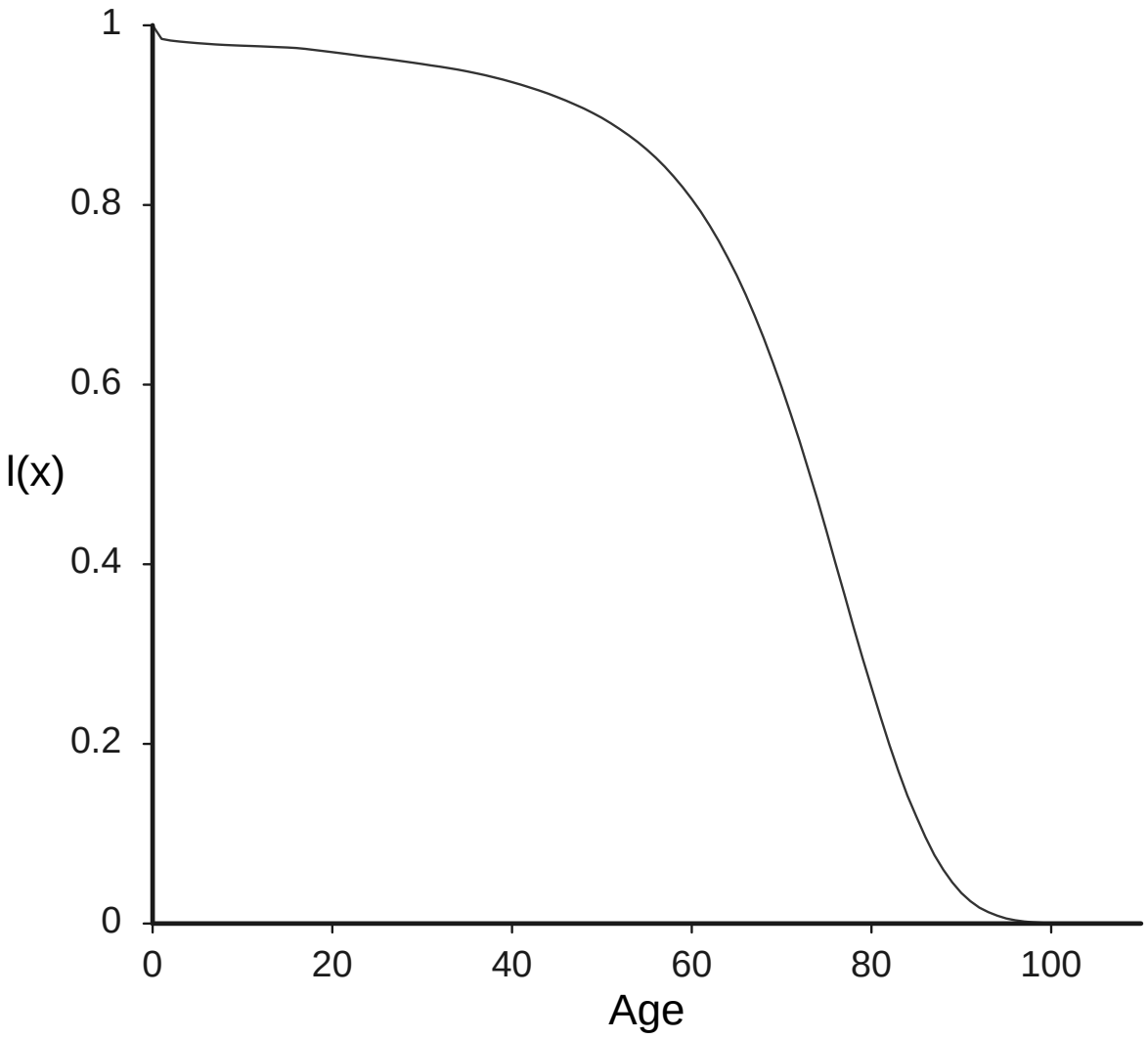

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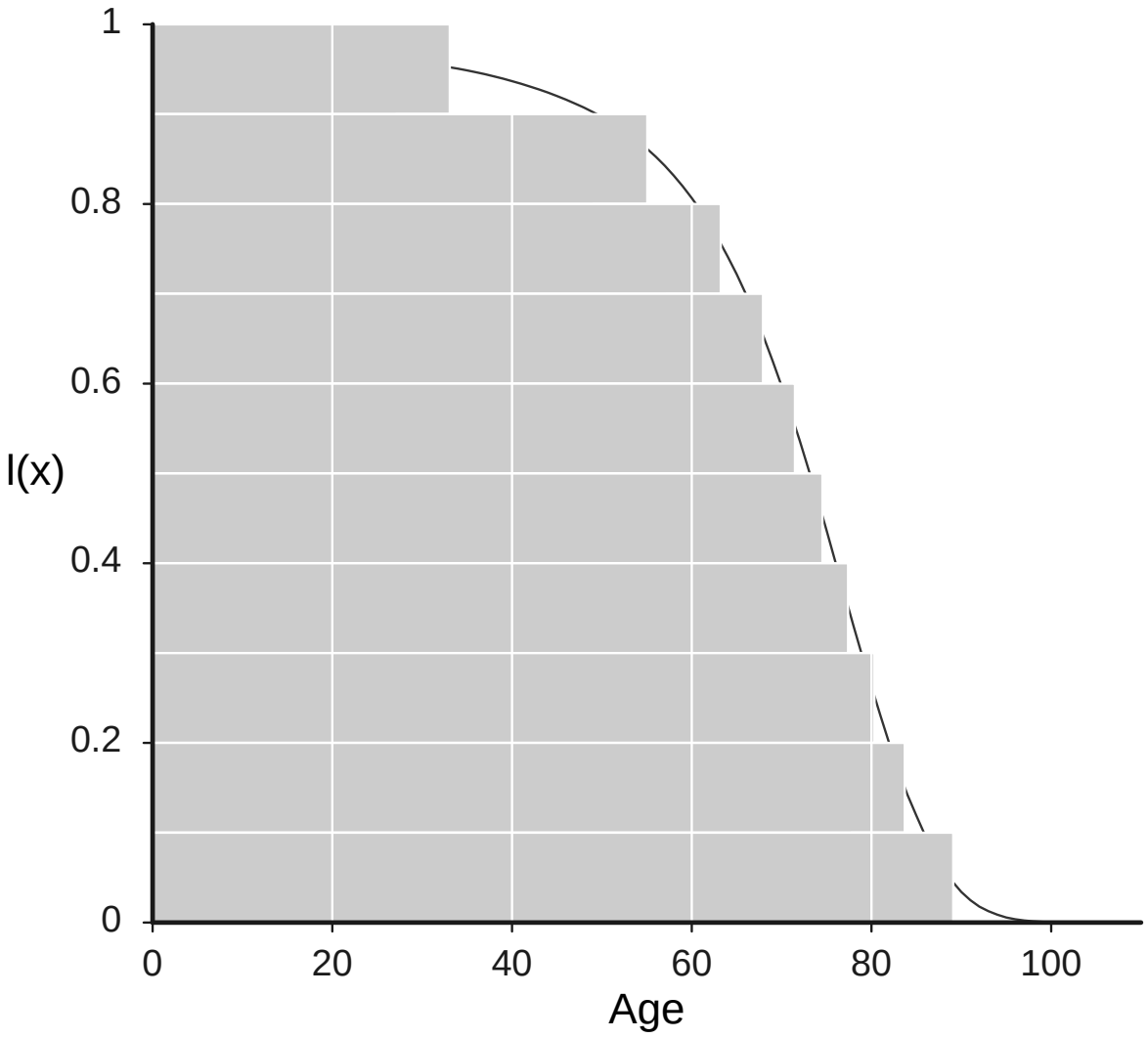

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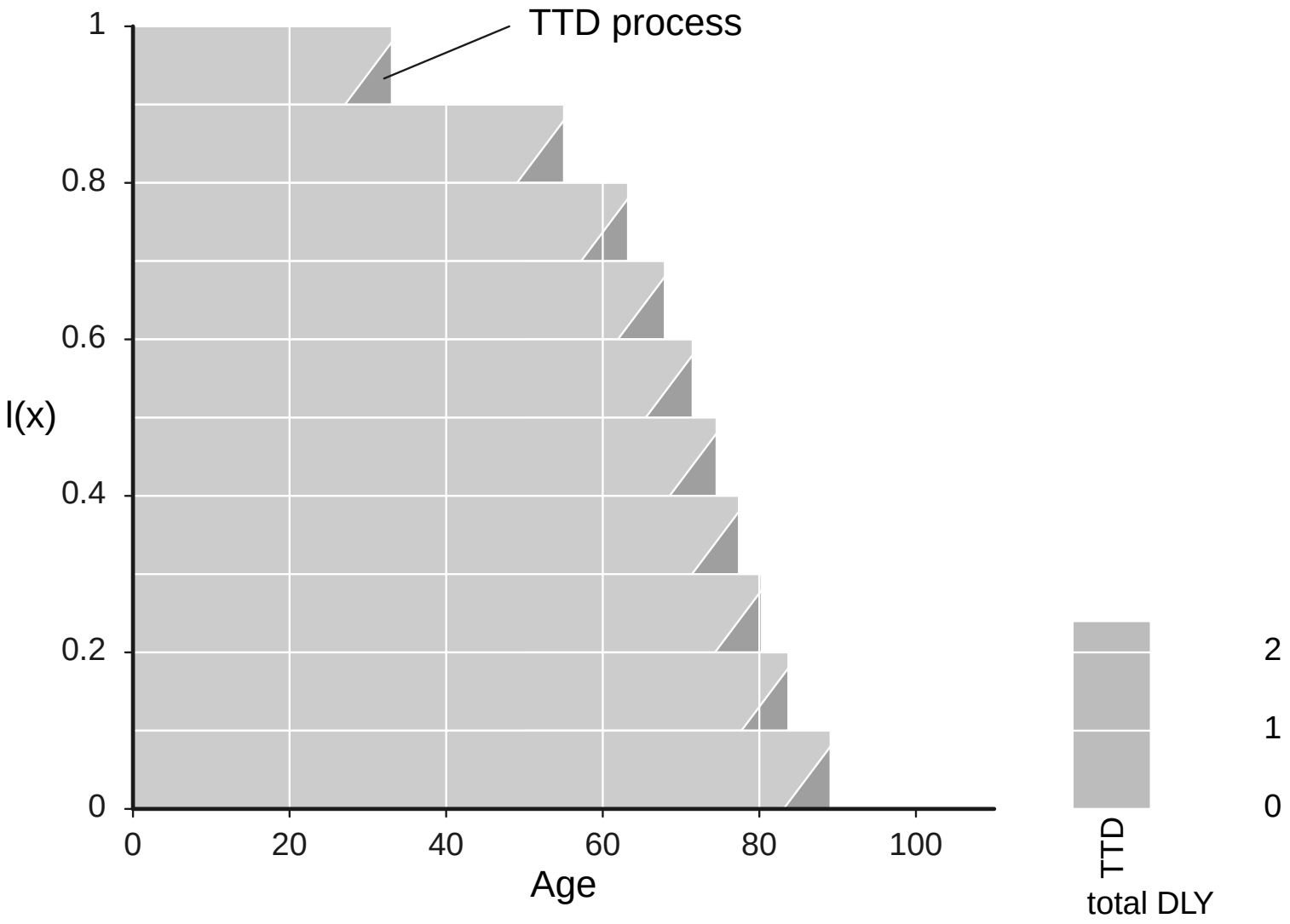

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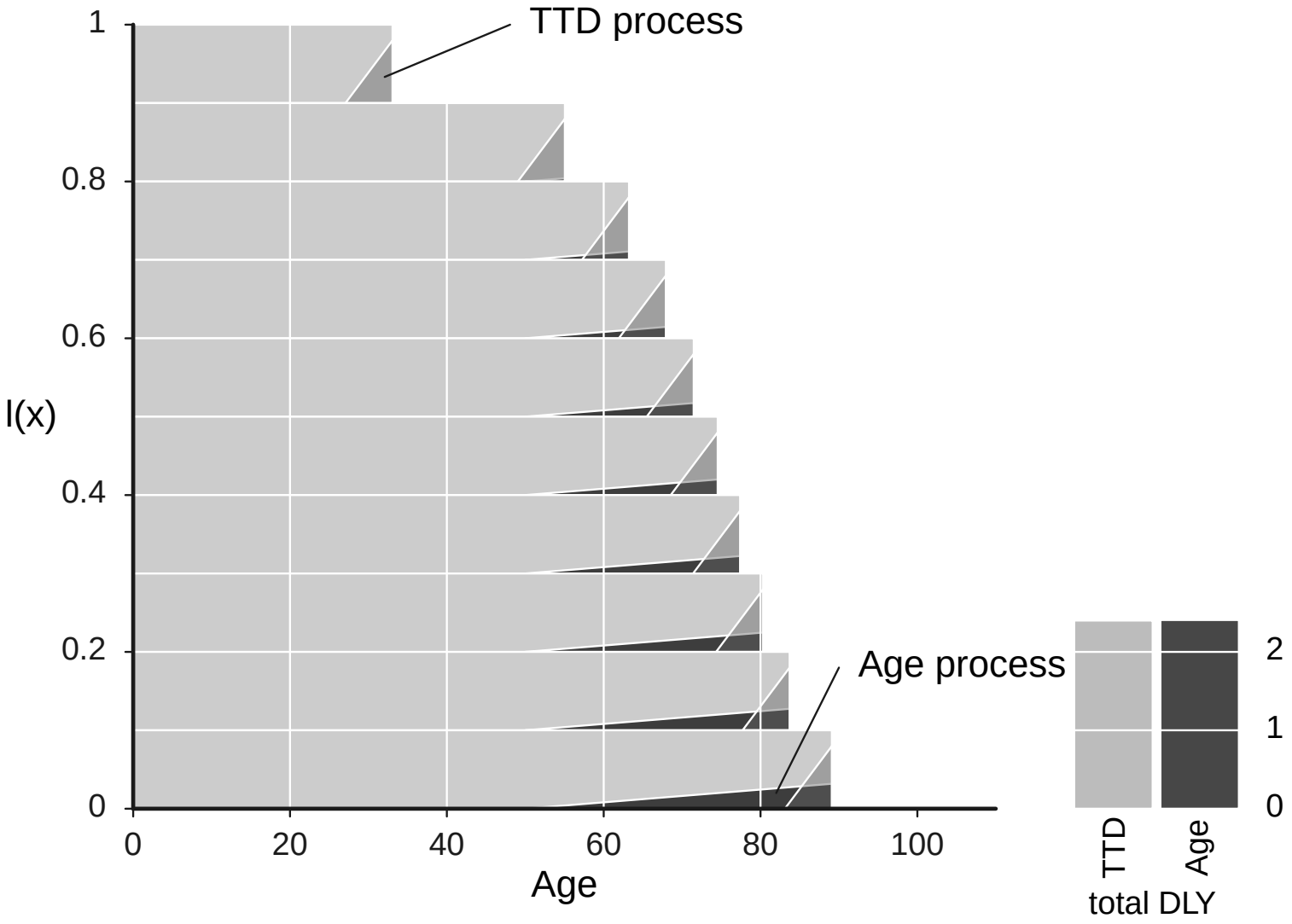

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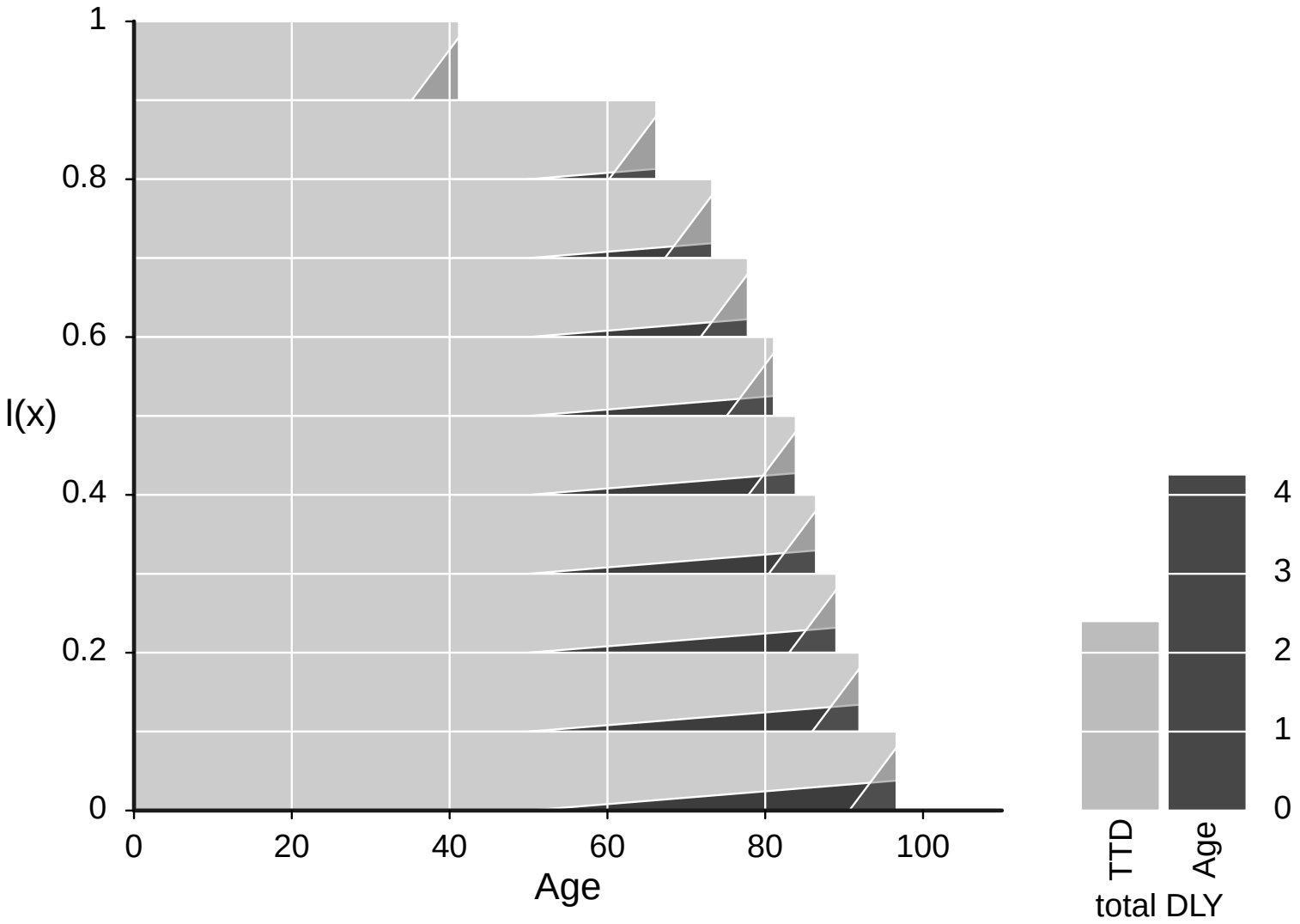

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The level of morbidity compression is the average proportion of life in good health, $\mathbb{C} = \frac{HLE}{LE}$.

Objective:

Separate morbidity levels and morbidity dispersion.

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Morbidity dispersion, $\mathbb{D}$, is the average time-to-death of late-life morbidity prevalence.

Formal definition

$$\mathbb{D} = \frac{\int_0^\omega y\pi^\star(y)\,\mathrm{d}y}{\int_0^\omega \pi^\star(y)\,\mathrm{d}y} \tag{1}$$

where a is age, y is time until death, and $\pi^\star(y)$ is morbidity prevalance by time to death.

Or one might rather weight a lifespan-varying $\pi(y, l)$, by the length-of-life distribution.

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Scenarios

Scenario	*ULE*	*HLE*	*LE*	$\mathbb{C}$	$\mathbb{D}$
Base					

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	=	=	=	=	$\downarrow$

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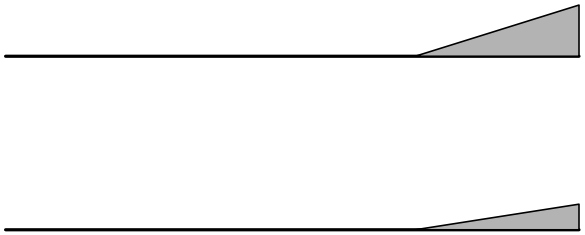	$\downarrow$	$\uparrow$	$=$	$\uparrow$	$=$

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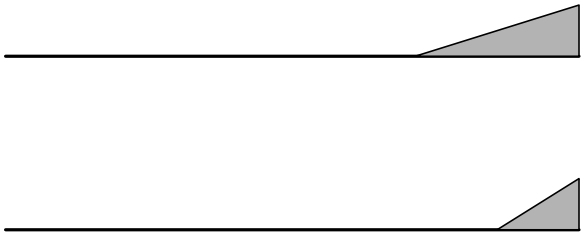	$\downarrow$	$\uparrow$	$=$	$\uparrow$	$\downarrow$

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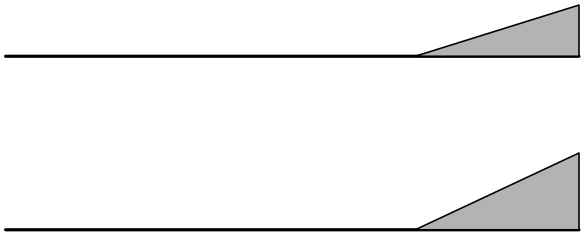	$\uparrow$	$\downarrow$	$=$	$\downarrow$	$=$

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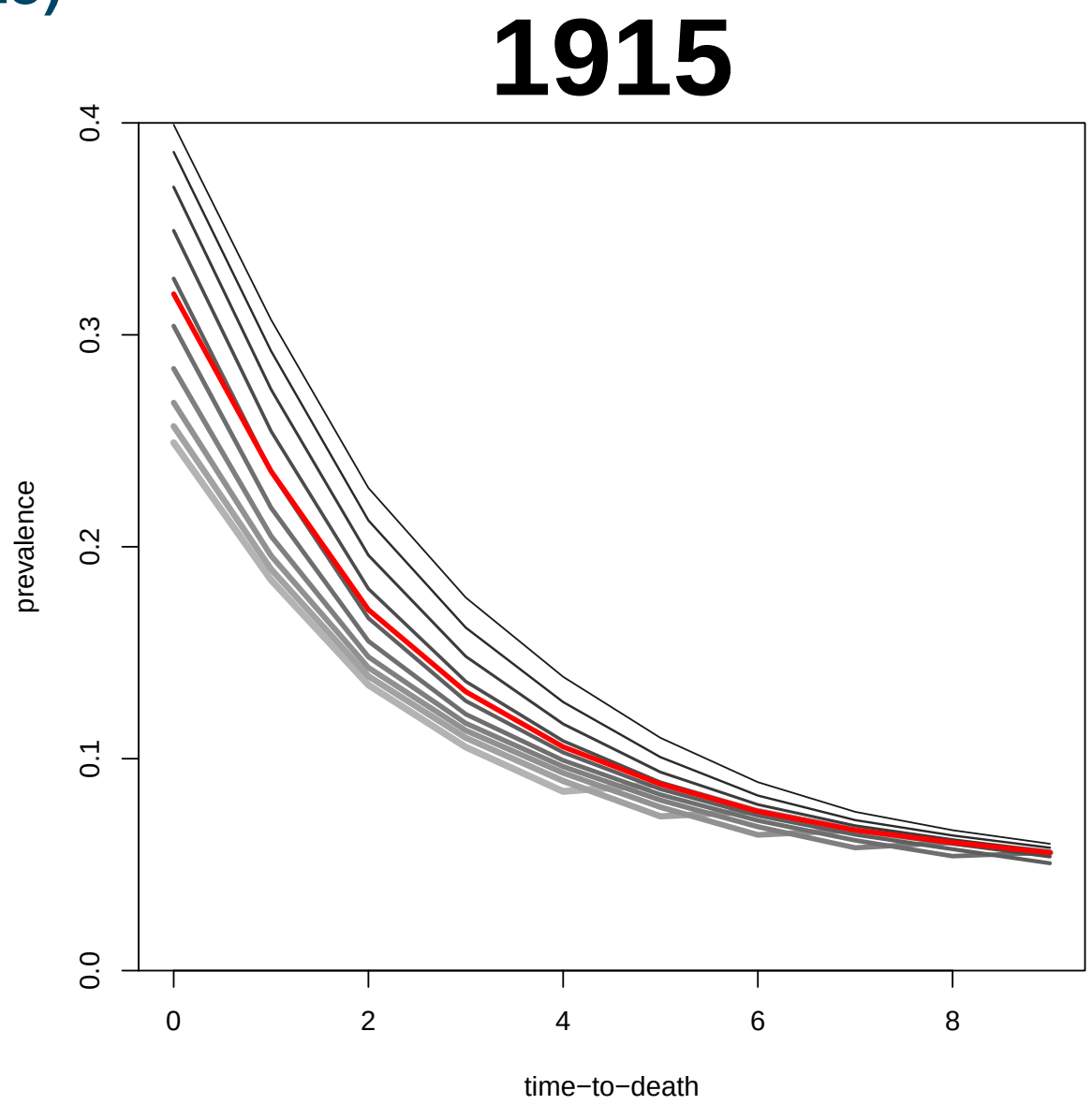
Observed time-to-death patterns (HRS, ADL3)



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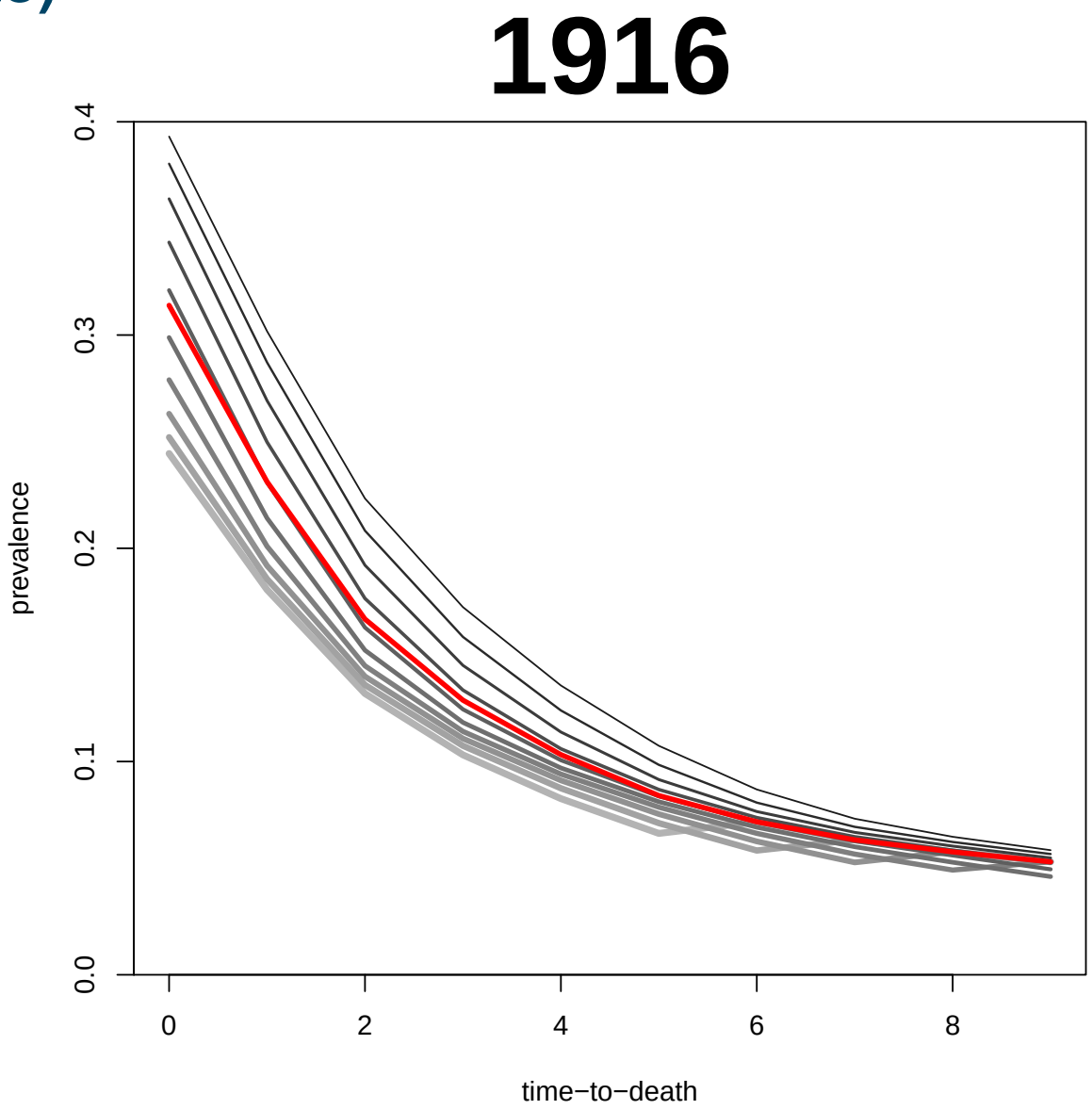

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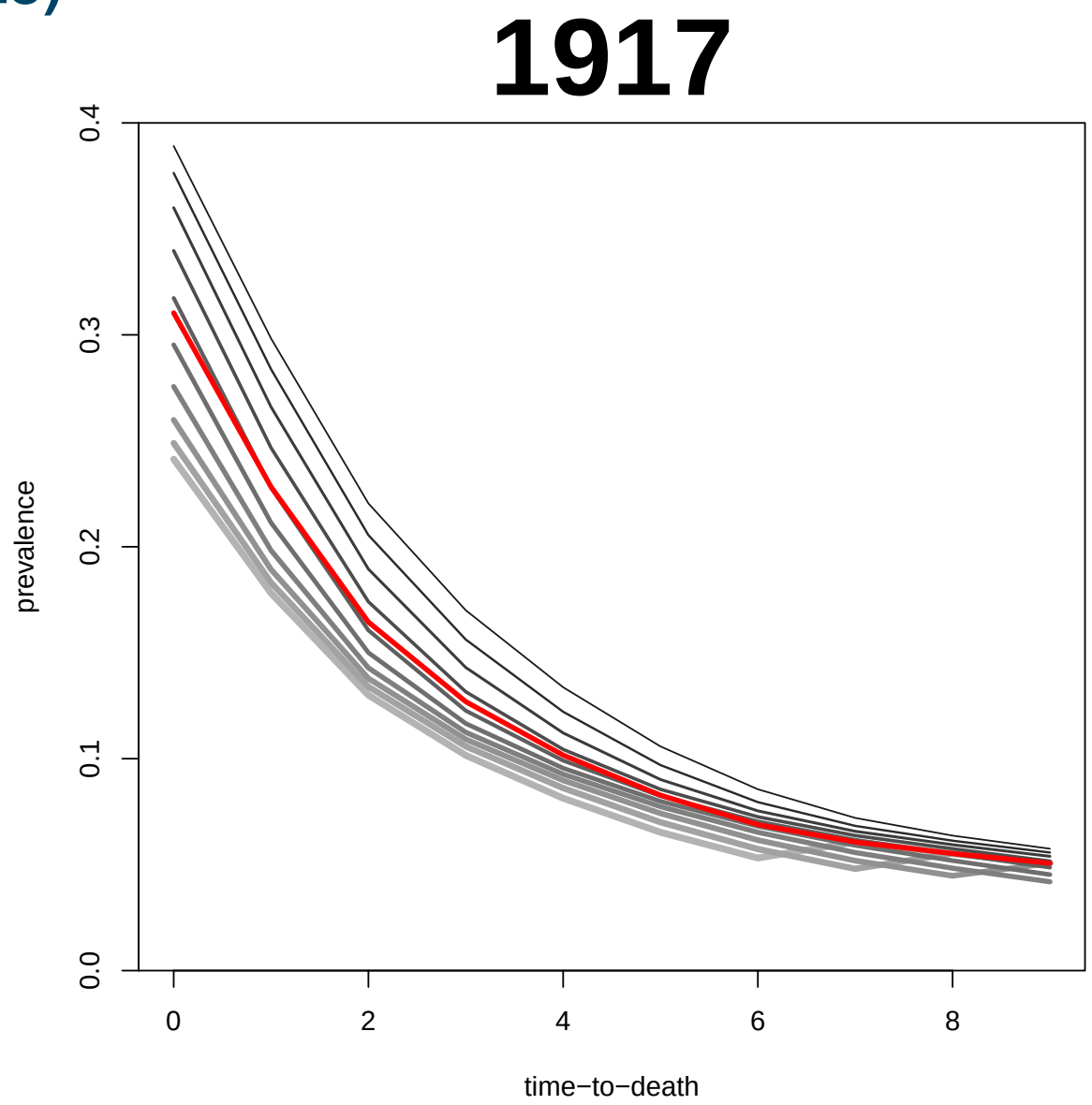

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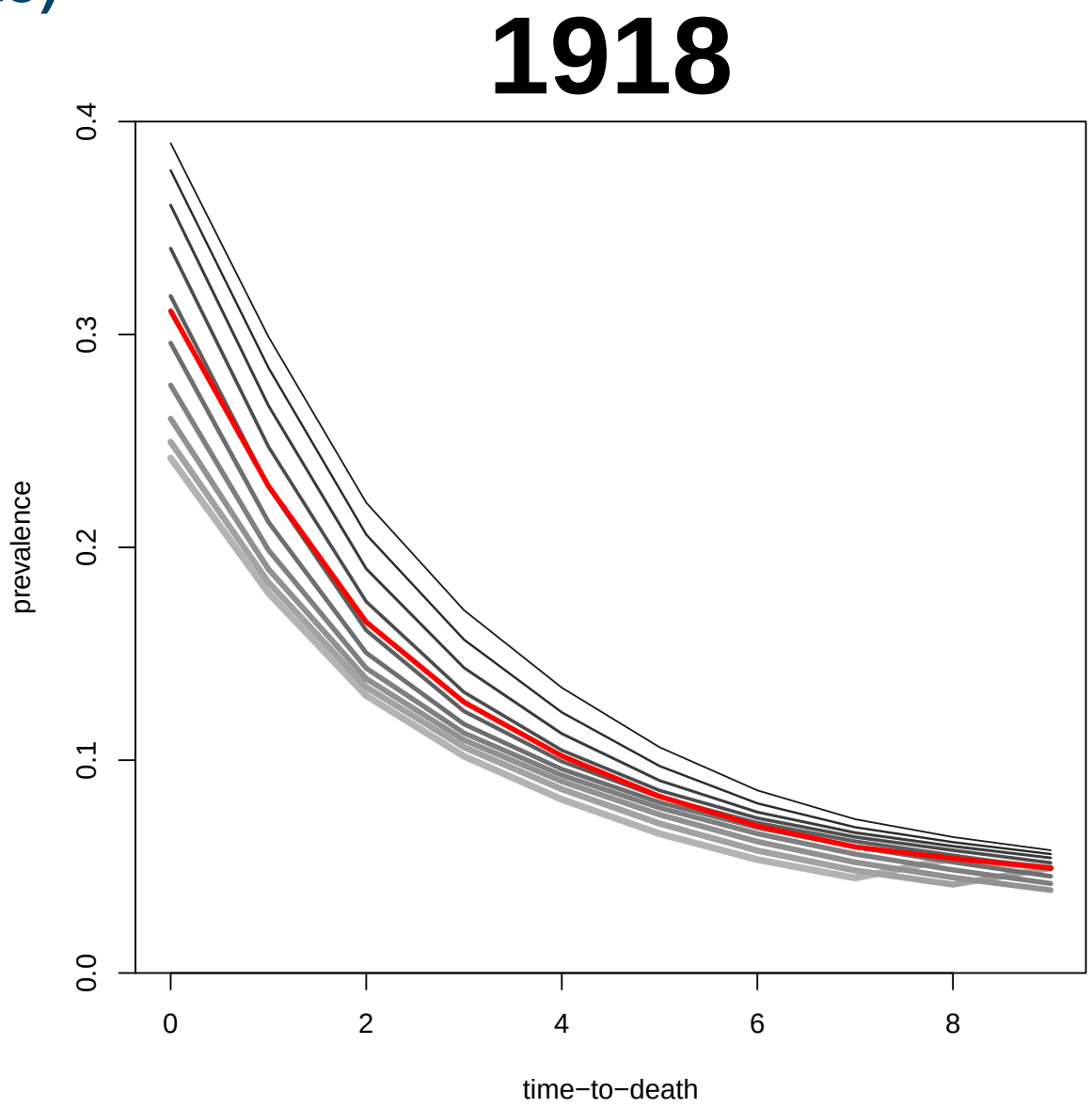

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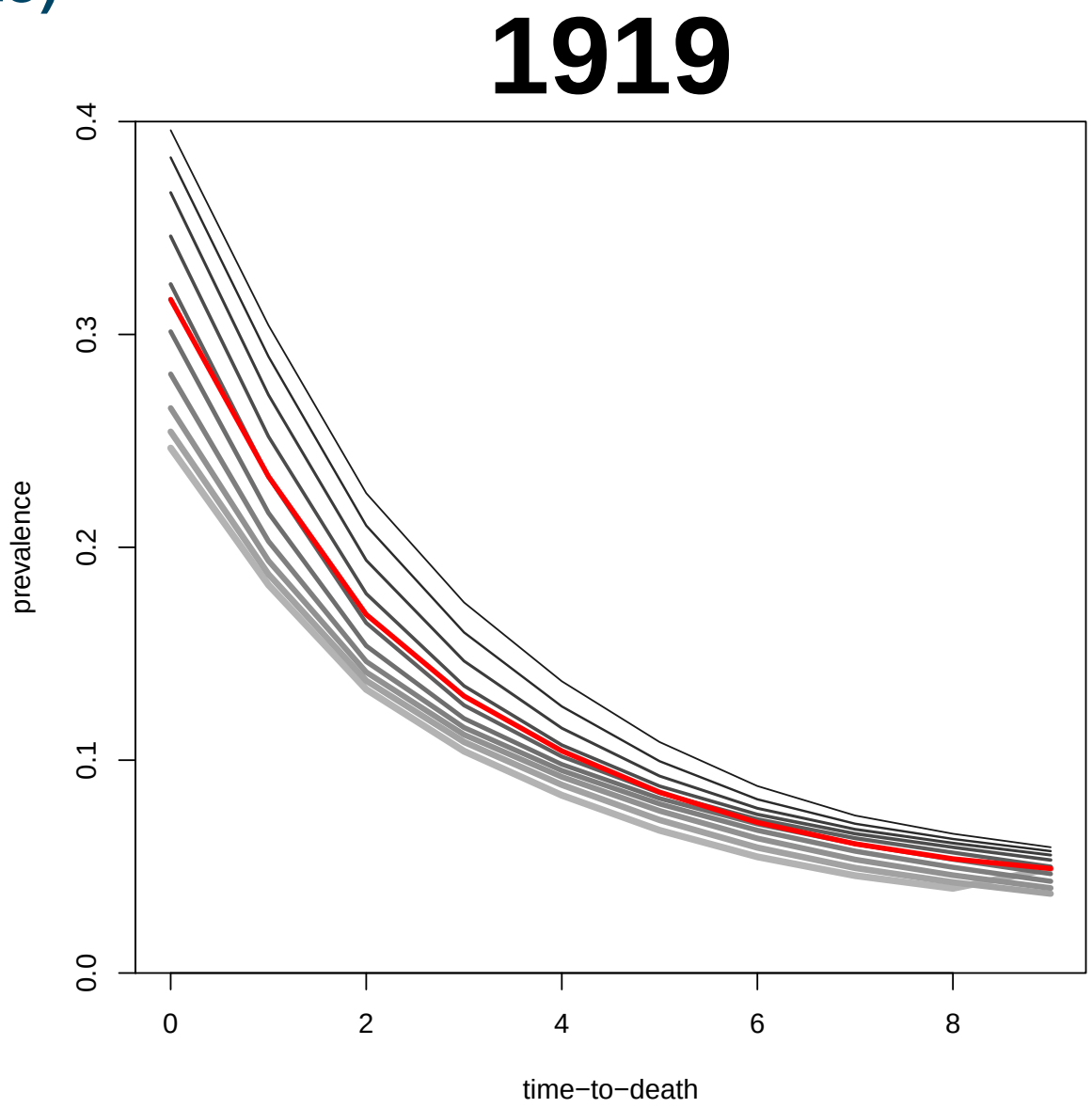

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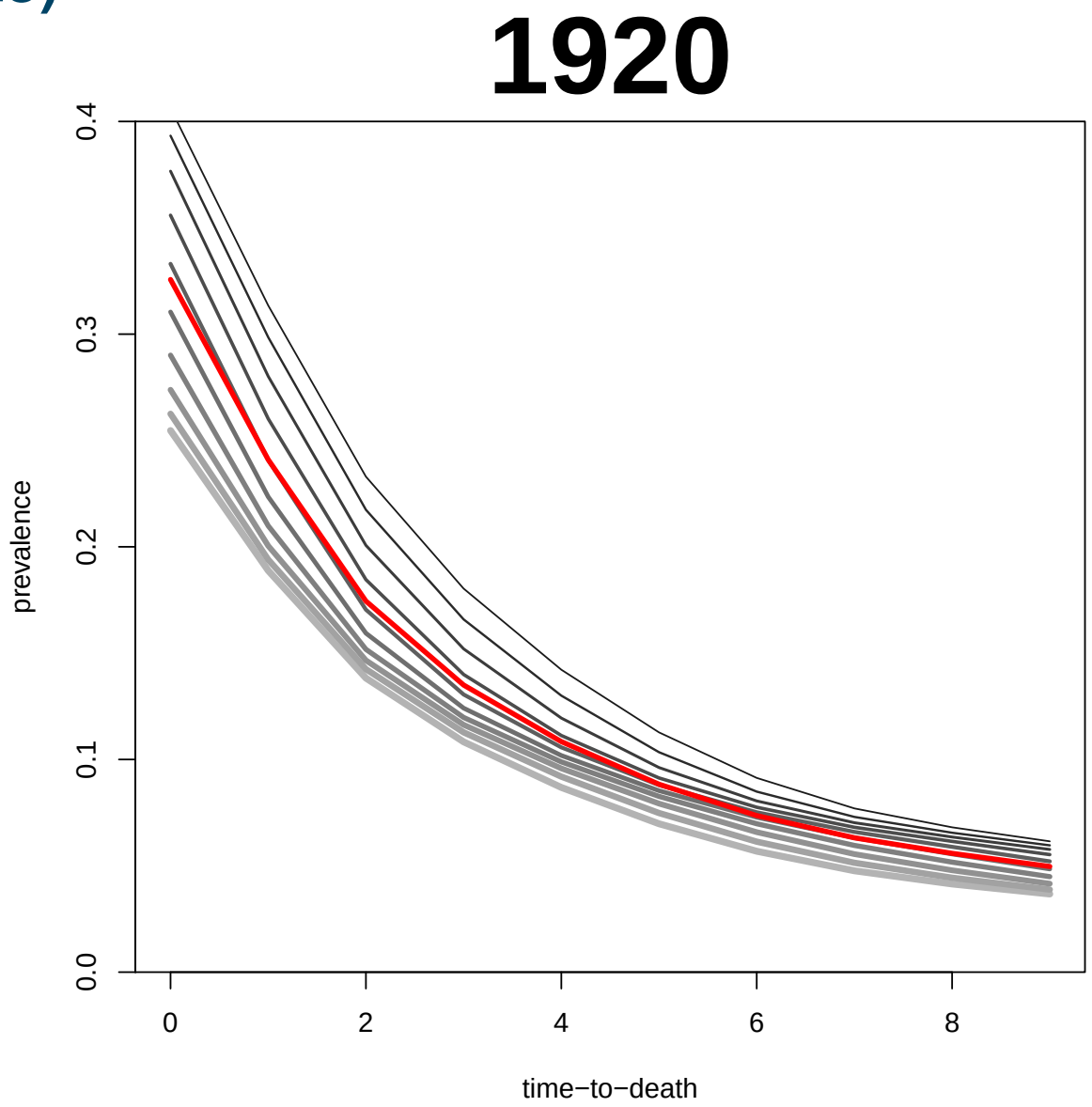

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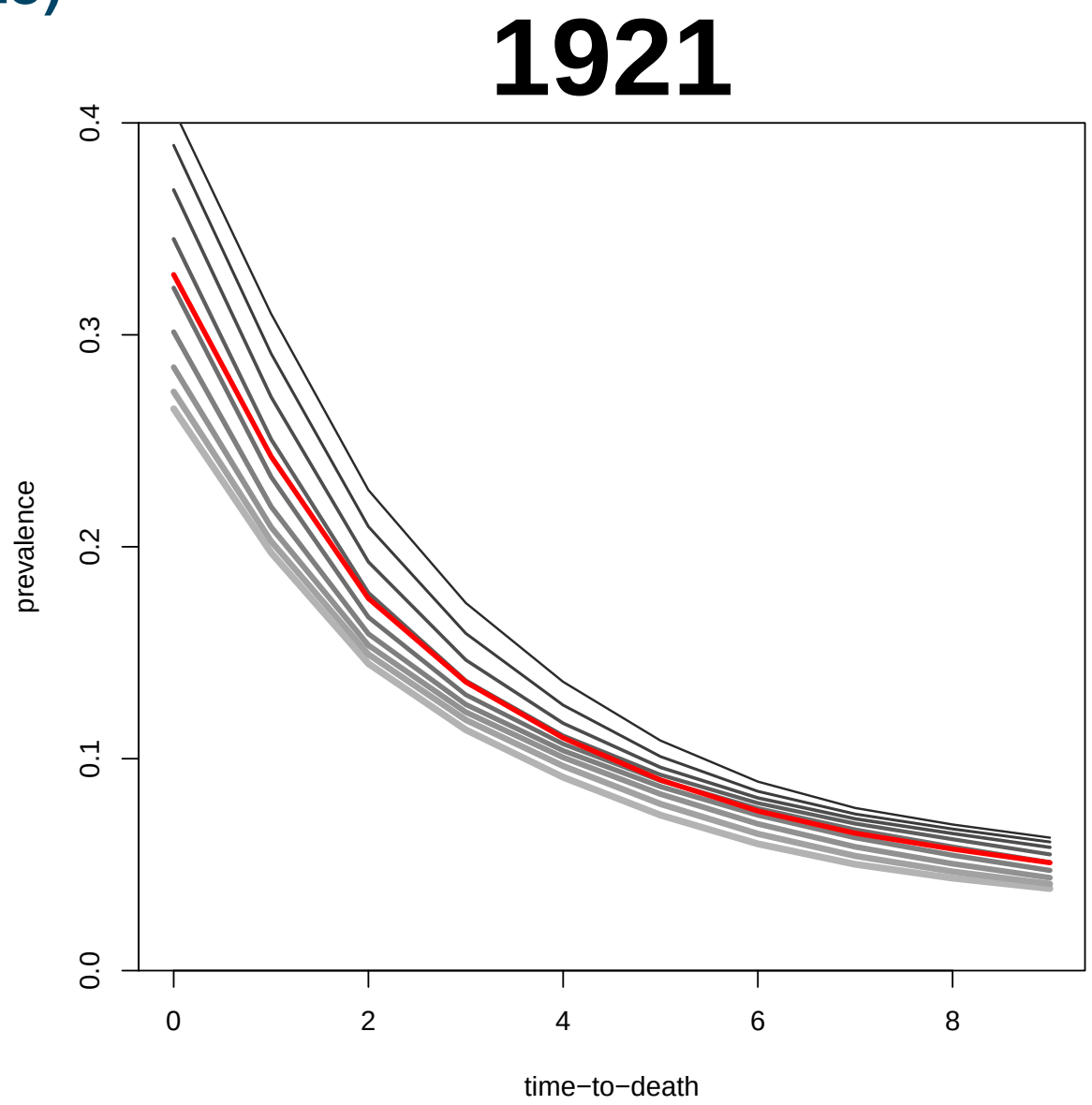

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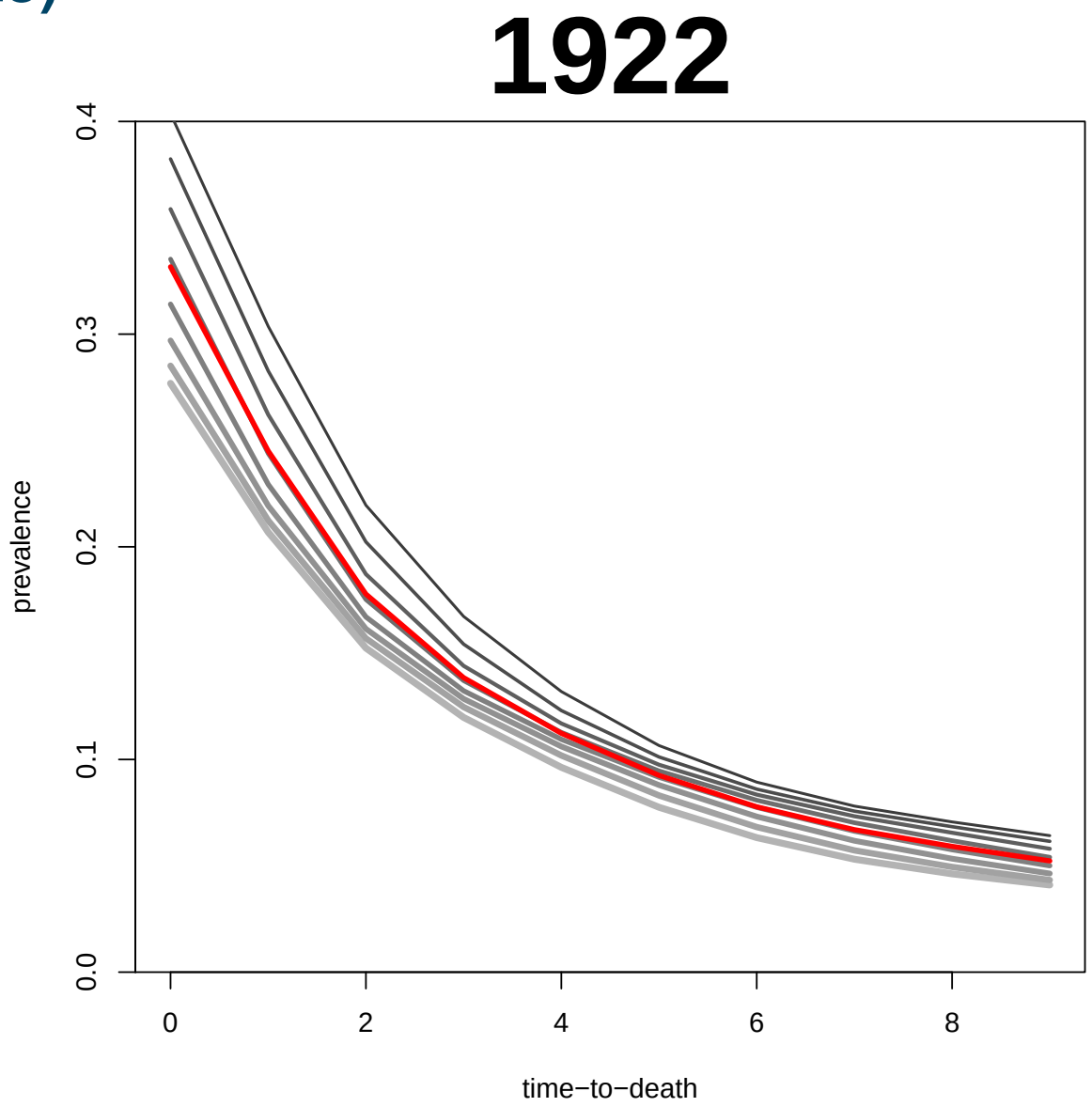

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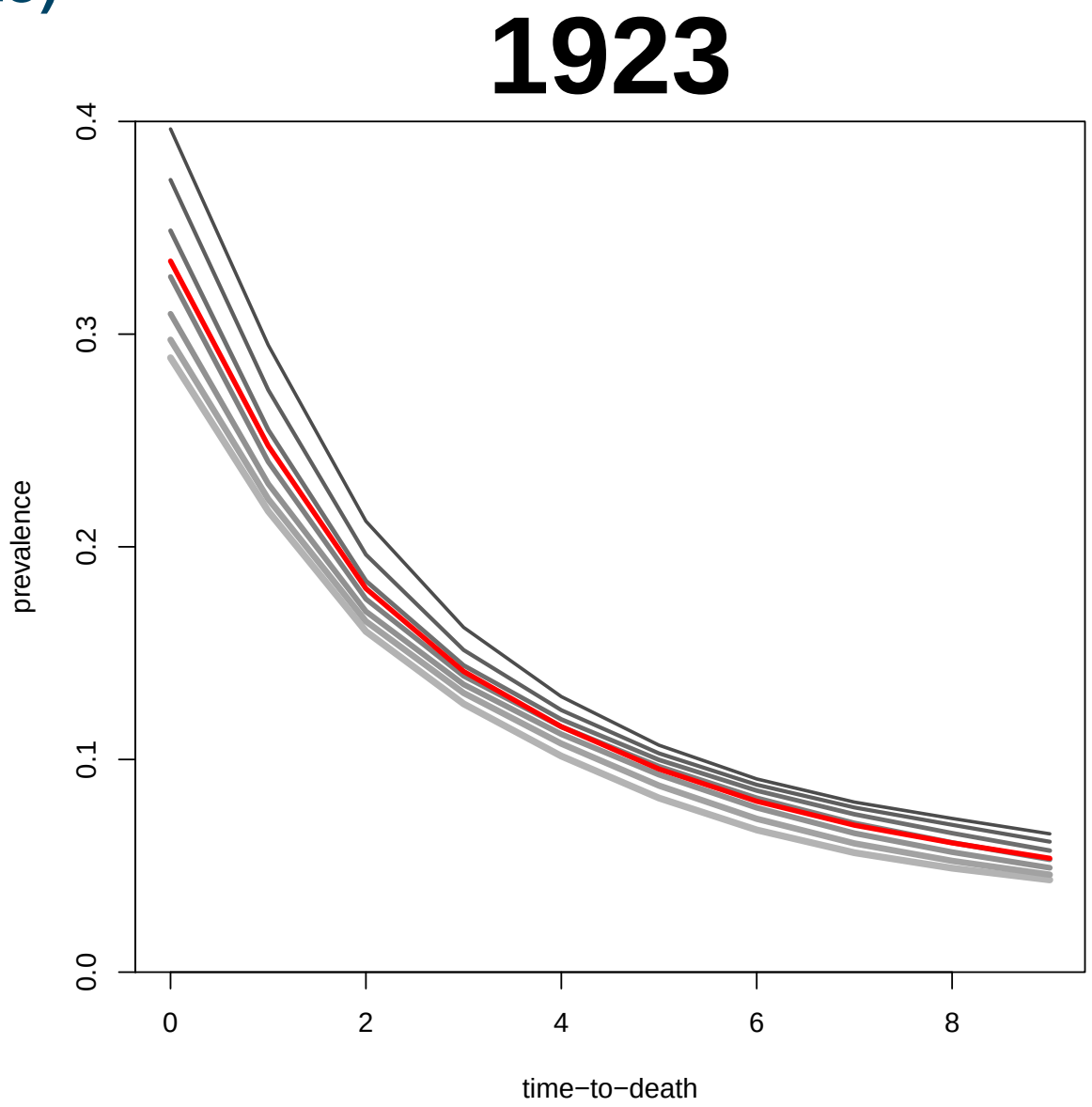

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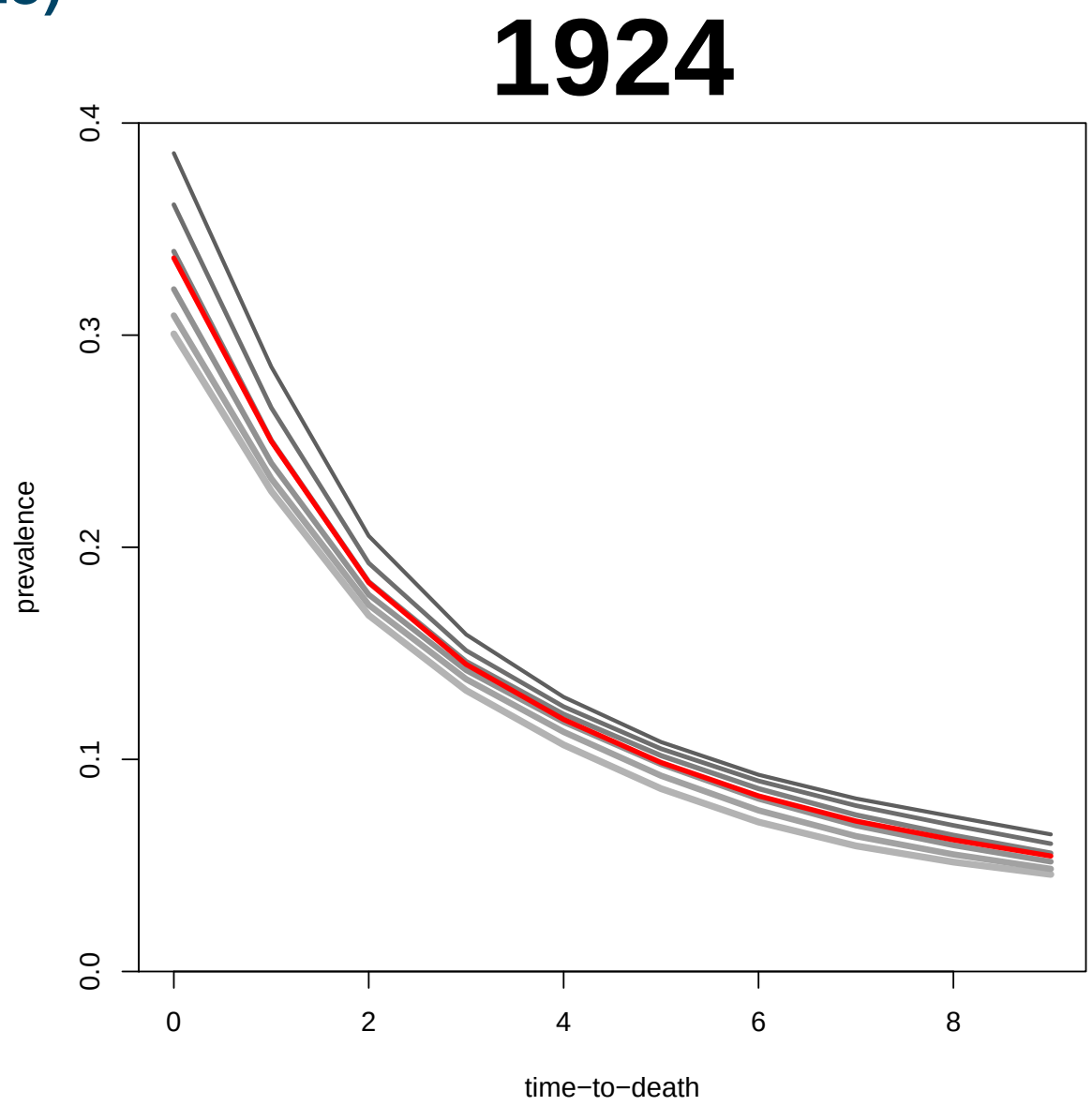

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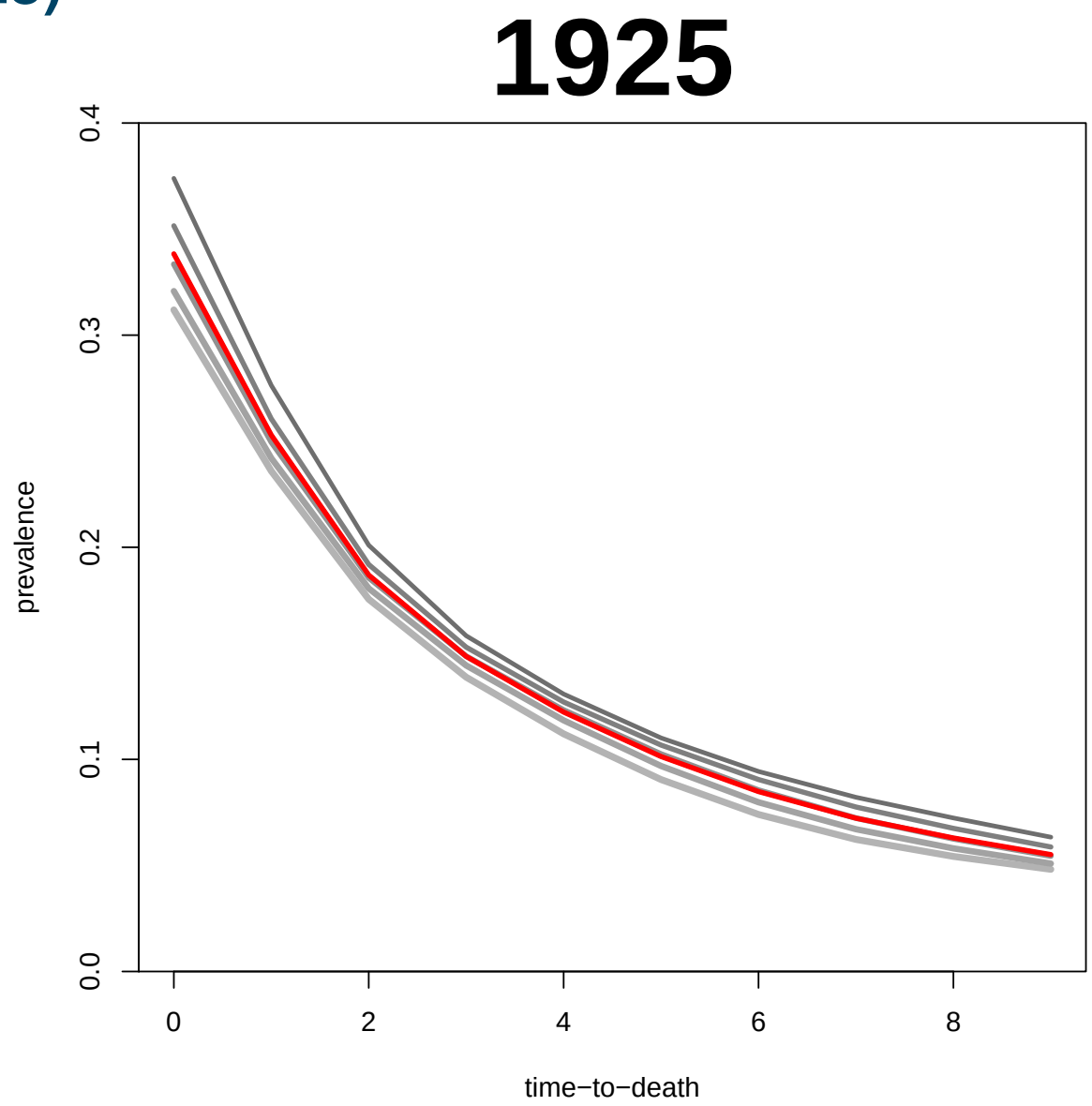
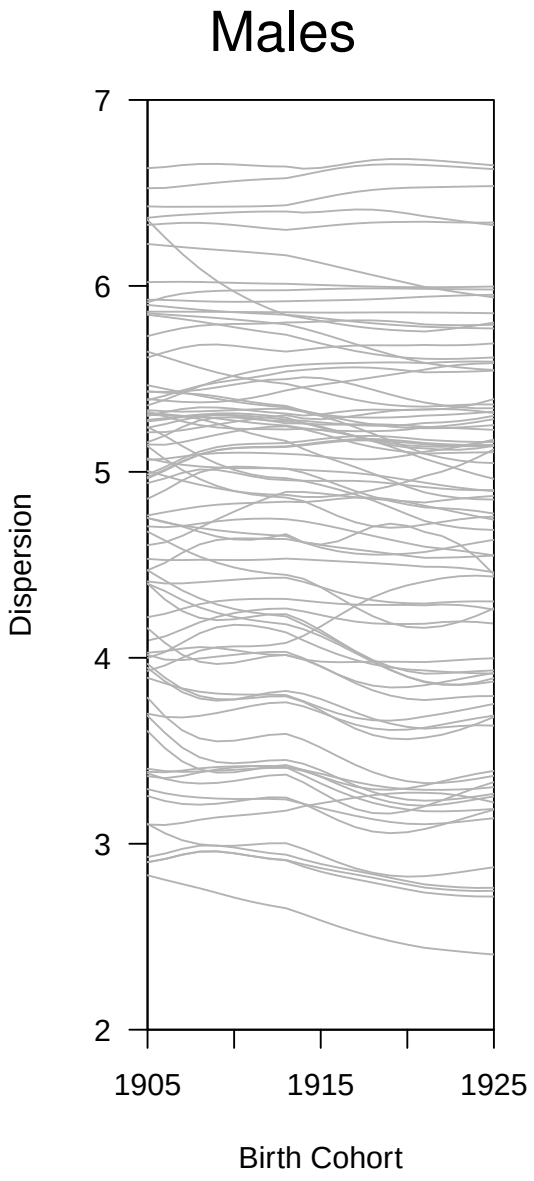
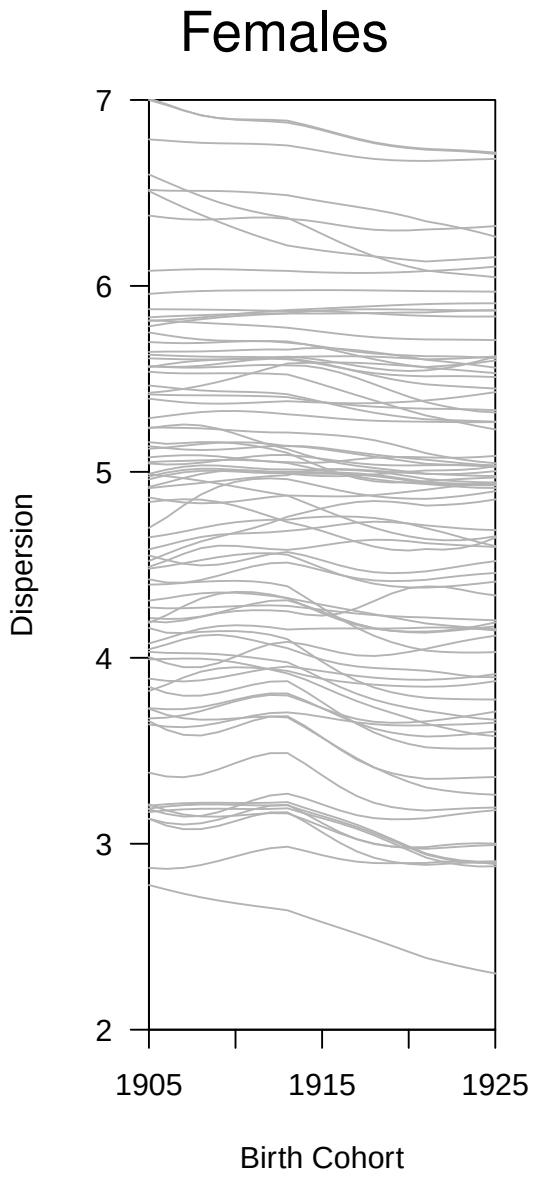


Results from HRS (RAND, vP), 82 measures





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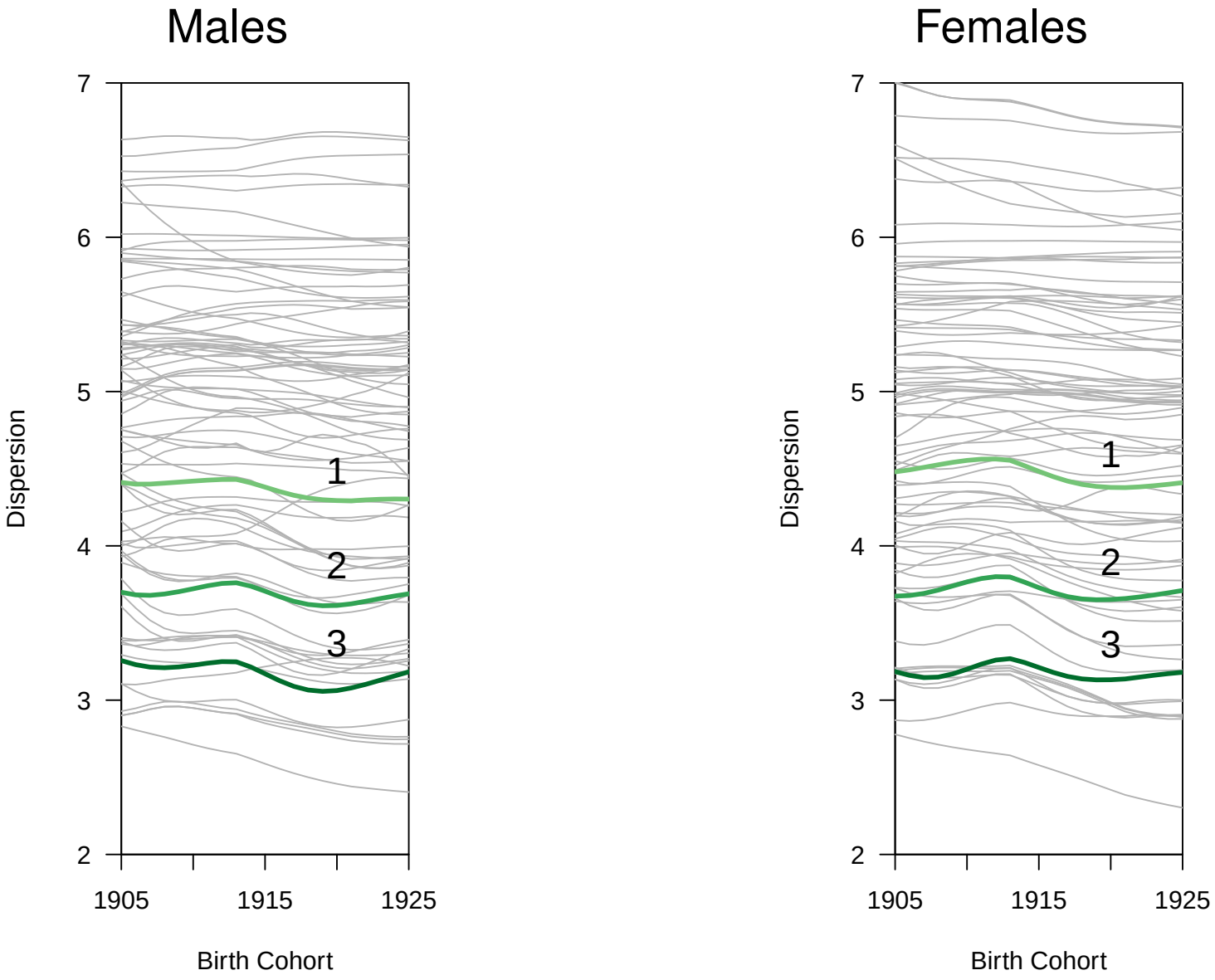

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