MONASH University

MONASH BUSINESS SCHOOL

Forecasting the age structure of the scientific workforce in Australia

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Labour force model

$$P_{x+1,t+1} = P_{x,t} - D_{x,t} - R_{x,t} + G_{x,t} + N_{x,t}$$

- $P_{x,t}$ = number of equivalent full-time workers
- $D_{x,t}$ = number of deaths
- $R_{x,t}$ = number of retirements.
- $N_{x,t}$ = number of graduates
- $G_{x,t}$ = net number of migrants

x = Age
t = Year

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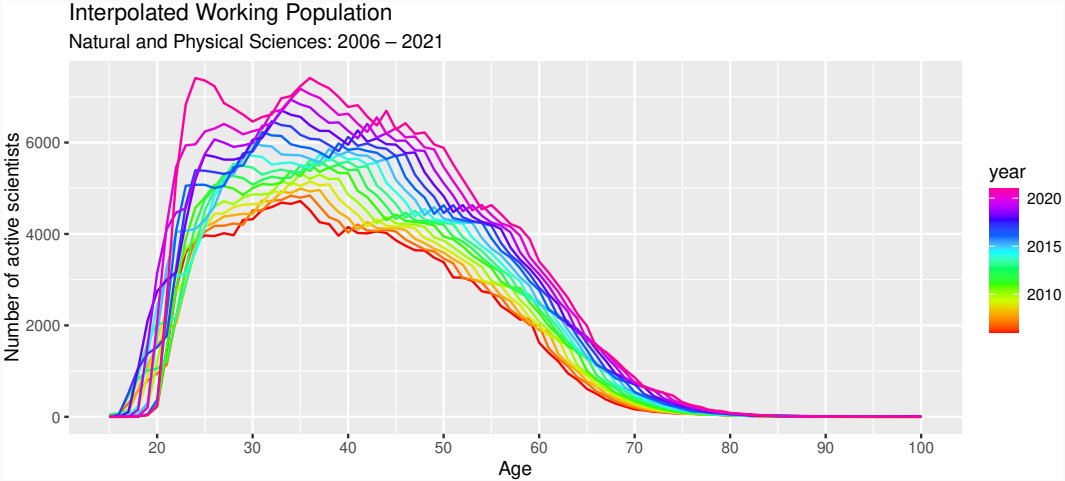
Assumptions:

- All processes are smooth functions of x.
- $N_{x,t} = G_{x,t} = 0$ for $x \geq 100$.

Working population: $P_{x,t}$

$$P_{x+1,t+1} = P_{x,t} - D_{x,t} - R_{x,t} + G_{x,t} + N_{x,t}$$



Death probabilities: $D_{x,t}/P_{x,t}$

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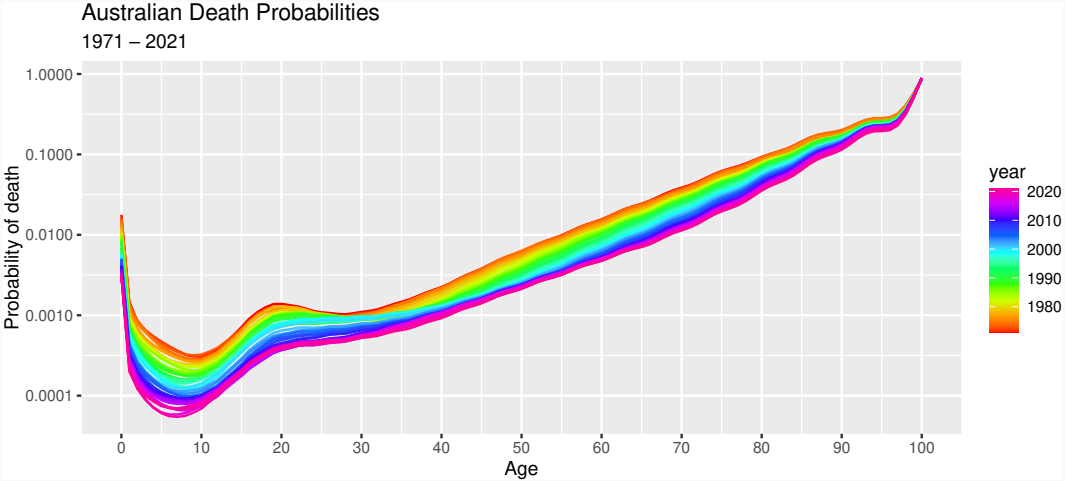
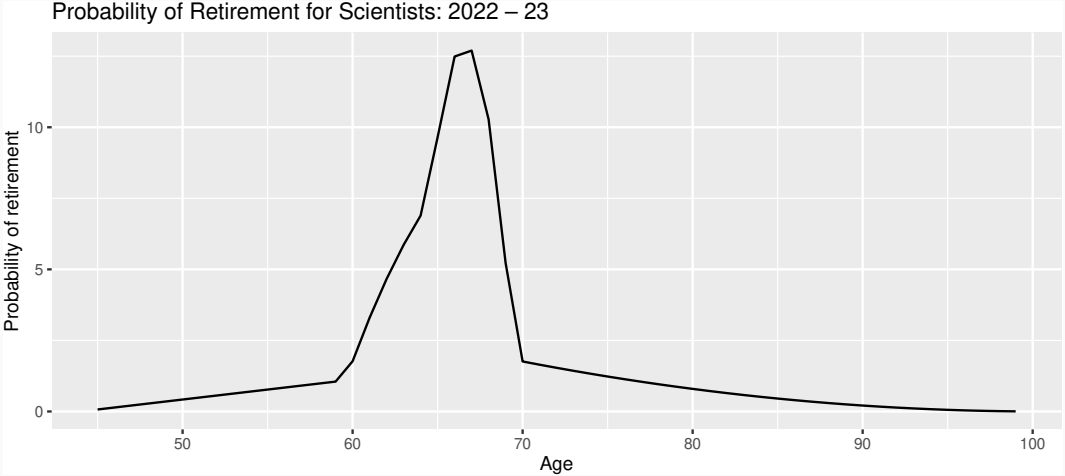


Retirement intentions $R_{x,t}/P_{x,t}$

$$P_{x+1,t+1} = P_{x,t} - D_{x,t} - R_{x,t} + G_{x,t} + N_{x,t}$$



Graduate completions $G_{x,t}$

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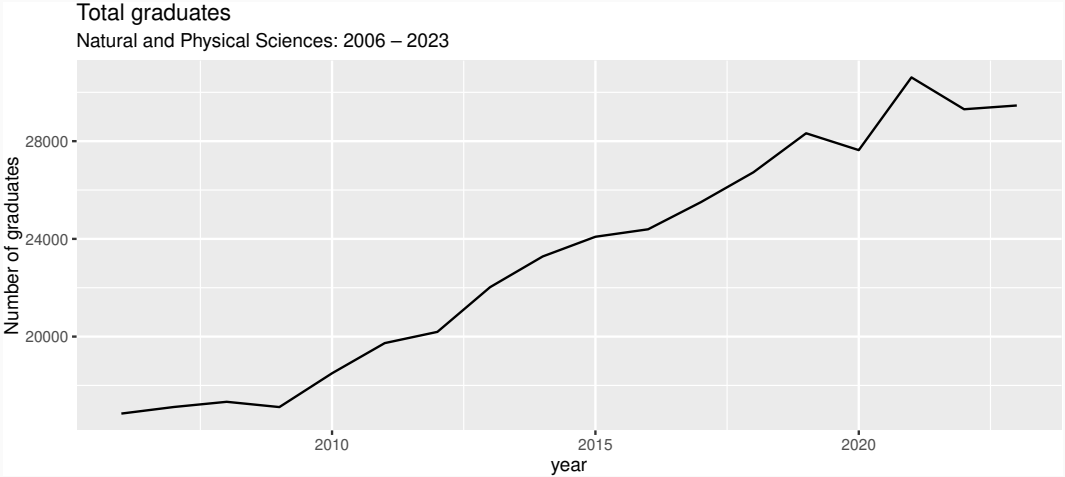

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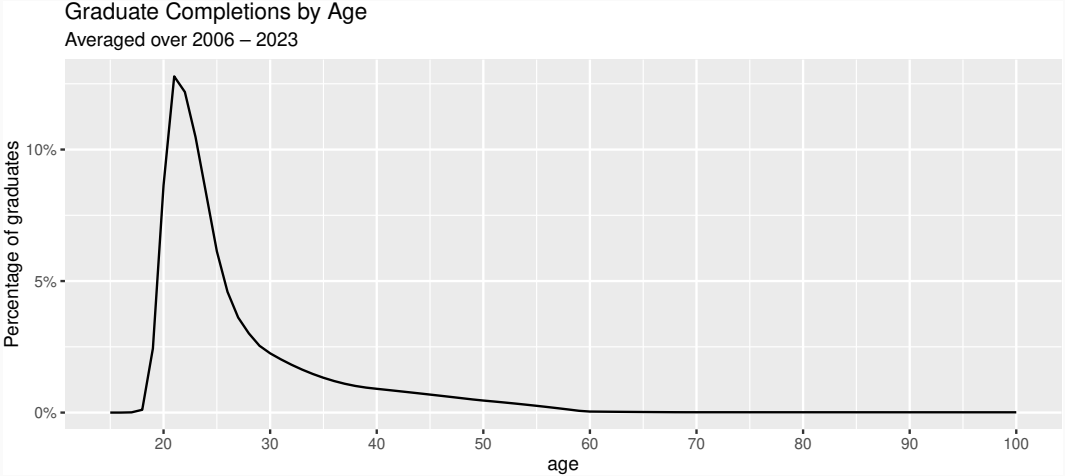

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