

Question 42

Given =

Cause 1 = Death, Cause 2 = Withdrawal (at the end of yr)

$$l_x^{(T)} = 1000$$

$$q_x^{(2)} = 0.4$$

$$d_x^{(1)} = 0.45 \times d_x^{(2)}$$

$$p_x'^{(2)} = ?$$

$$p_x'^{(2)} = 1 - q_x'^{(2)}$$

$$q_x'^{(2)} = \frac{\text{\# of people ~~draw~~ withdraw in yr 1}}{\text{\# of people subject to this effect.}}$$

As withdrawal can only happen at the end of the yr, ~~the~~ the " # of people subject to this effect (withdrawal) " is the # of people survived yr 1.

$$l_x^{(T)} \quad d_x^{(2)} = l_x^{(T)} \cdot q_x^{(2)}$$
$$1,000 \quad 400 = 1000 \times 0.4$$

$$d_x^{(1)} = d_x^{(2)} \cdot 0.45$$
$$180$$

$$q_x'^{(2)} = \frac{400}{1000 - 180} = 0.488$$

$$p_x'^{(2)} = 0.512$$

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