



F_{t+1} : fail before $t+1$

B_t : benefit at t

W_t : work until t

W_{t+1} : work until $t+1$

$$P(F_{t+1} | W_t) = 0.4$$

$$P(W_{t+1} | W_t) = 1 - 0.4 = 0.6$$

$$E(\text{Benefit}) = \sum_{i=1}^4 B_i \cdot P(F_i | W_{i-1}) \cdot P(W_{i-1})$$

$$P(W_n) = P(W_1) \cdot P(W_2 | W_1) \cdots P(W_n | W_{n-1}) = 0.6^n$$

$$E(\text{Benefit}) = 4000(0.4)(0.6)^0 + 3000(0.4)(0.6)^1 + 2000(0.4)(0.6)^2 + 1000(0.4)(0.6)^3$$

$$E(\text{Benefit}) = 2694$$

E