Question #63
Answer: D

Let $\overline{A}_x$ and $\overline{a}_x$ be calculated with μ_{x+t} and $\delta = 0.06$
Let $\overline{A}_x{}^*$ and $\overline{a}_x{}^*$ be the corresponding values with μ_{x+t} increased by 0.03 and δ decreased by 0.03

$$\overline{a}_x = \frac{1-\overline{A}_x}{\delta} = \frac{0.4}{0.06} = 6.667$$

$$\overline{a}_x{}^* = \overline{a}_x$$

$$\left[\text{Proof: } \overline{a}_x{}^* = \int_0^\infty e^{-\int_0^t \left(\mu_{x+s}+0.03\right)ds} e^{-0.03t} dt\right.$$

$$= \int_0^\infty e^{-\int_0^t \mu_{x+s}\,ds} e^{-0.03t} e^{-0.03t} dt$$

$$= \int_0^\infty e^{-\int_0^t \mu_{x+s}\,ds} e^{-0.06t} dt$$

$$\left. = \overline{a}_x \right]$$

$$\overline{A}_x{}^* = 1 - 0.03\overline{a}_x{}^* = 1 - 0.03\overline{a}_x$$

$$= 1 - (0.03)(6.667)$$

$$= 0.8$$