

Question #70

Answer is D

Because the total expected claims for business use is 1.8, it must be that 20% of business users are rural and 80% are urban. Thus the unconditional probabilities of being business-rural and business-urban are 0.1 and 0.4 respectively. Similarly the probabilities of being pleasure-rural and pleasure-urban are also 0.1 and 0.4 respectively. Then,

$$\mu = 0.1(1.0) + 0.4(2.0) + 0.1(1.5) + 0.4(2.5) = 2.05$$

$$v = 0.1(0.5) + 0.4(1.0) + 0.1(0.8) + 0.4(1.0) = 0.93$$

$$a = 0.1(1.0^2) + 0.4(2.0^2) + 0.1(1.5^2) + 0.4(2.5^2) - 2.05^2 = 0.2225$$

$$k = v/a = 4.18$$

$$Z = 1/(1 + 4.18) = 0.193.$$