

Problem 114

		Y	
		0	1
X	0	.8	.025
	1	.05	.125

$$V(Y|X=1) = E(Y^2|X=1) - [E(Y|X=1)]^2$$

$$P(Y=0|X=1) = \frac{P(Y=0 \cap X=1)}{P(X=1)} = \frac{.05}{.05 + .125} = .2857$$

$$P(Y=1|X=1) = 1 - P(Y=0|X=1) = .7143$$

$$E(Y|X=1) = 0 \cdot (.2857) + 1 \cdot (.7143) = .7143$$

$$E(Y^2|X=1) = 0^2 \cdot (.2857) + 1^2 \cdot (.7143) = .7143$$

$$V(Y|X=1) = .7143 - .7143^2 = \underline{\underline{.204}}$$

C