10/11/15

Soluzioni dettagliate di esercizi non svolti in aula

⑦ • $p(AA) = 0.4^2$, $p(Aa) = 2 \times 0.4 \times 0.6$, $p(aa) = 0.6^2$

• $p(F=A \mid P=A \text{ e } M=a)$

$= p(F=AA \circ F=Aa \mid (P=AA \circ P=Aa) \text{ e } M=aa)$

$= p(F=AA \mid (P=AA \circ P=Aa) \text{ e } M=aa)^0$

$+ p(F=Aa \mid (P=AA \circ P=Aa) \text{ e } M=aa)$

$= \dfrac{p(F=Aa \text{ e } (P=AA \circ P=Aa) \text{ e } M=aa)}{p((P=AA \circ P=Aa) \text{ e } M=aa)}$

$= \dfrac{p(F=Aa \text{ e } P=AA \text{ e } M=aa) + p(F=Aa \text{ e } P=Aa \text{ e } M=aa)}{p(P=AA \circ P=Aa) \cdot p(M=aa)}$

$= \dfrac{\left(p(F=Aa \mid P=AA \text{ e } M=aa) \cdot p(AA) \cdot \cancel{p(aa)} + p(F=Aa \mid P=Aa \text{ e } M=aa) \cdot p(Aa) \cdot \cancel{p(aa)}\right)}{(1-p(aa)) \cdot \cancel{p(aa)}}$

$= \dfrac{p(AA) \cdot p(Aa)}{1-p(aa)}$

- $p(P = A \mid F = a)$

$= p(P = AA \circ P = Aa \mid F = aa)$

$= \cancel{p(P = AA \mid F = aa)}^{0} + p(P = Aa \mid F = aa)$

$= \cancel{p(P = Aa \text{ e } M = AA \mid F = aa)}^{0}$

$+ p(P = Aa \text{ e } M = Aa \mid F = aa)$

$+ p(P = Aa \text{ e } M = aa \mid F = aa)$

$= \dfrac{p(P = Aa \text{ e } M = Aa \text{ e } F = aa) + p(P = Aa \text{ e } M = aa \text{ e } F = aa)}{p(aa)}$

$= \dfrac{\left(p(F = aa \mid P = Aa \text{ e } M = Aa) \cdot p(Aa)^2 \cdot \right.}{\left. + p(F = aa \mid P = Aa \text{ e } M = aa) \cdot p(Aa) \cdot p(aa) \right)}$

$p(aa)$

$= \dfrac{\frac{1}{4} p(Aa)^2 + \frac{1}{2} p(Aa) \cdot p(aa)}{p(aa)}$

- $p(F = A \mid P = a \text{ e } M = a)$

$= p(F = AA \mid P = aa \text{ e } M = aa) = 0$

- Se x è il valore di $p(F = A \mid P = A \text{ e } M = a)$ trovato al secondo punto, viene

$1 - \left((1-x)^5 + 5 \cdot x \cdot (1-x)^4 \right)$.

(8) $f(m) = f(MM) = f(M)^2 \Rightarrow f(M) = \sqrt{0.49} = 0.7$

$f(a) = f(AA) + f(AM) = f(A)^2 + 2 f(A) \cdot f(M)$

$\Rightarrow f(A)^2 + 2 f(A) f(M) - f(a) = 0$

$\Rightarrow f(A) = -f(M) + \sqrt{f(M)^2 + f(a)}$

$= -0.7 + \sqrt{0.49 + 0.15}$

$= -0.7 + \sqrt{0.64} = -0.7 + 0.8 = 0.1$

$f(R) = 1 - f(a) - f(m) = 0.2$

$f(x) = f(RR) + f(RM) = f(R)^2 + 2 f(R) \cdot f(M)$

$= 0.04 + 2 \times 0.2 \times 0.7 = 0.32$ ✓

$f(y) = f(AR) = 2 f(A) \cdot f(R) = 2 \times 0.1 \times 0.2$

$= 0.04$ ✓

(9) •

$p(AA) = 0.3^2 = 0.09$
$p(AO) = 2 \times 0.3 \times 0.6 = 0.36$ } $p(A) = 0.45$

$p(BB) = 0.1^2 = 0.01$
$p(BO) = 2 \times 0.1 \times 0.6 = 0.12$ } $p(B) = 0.13$

$p(AB) = 2 \times 0.3 \times 0.1 = 0.06$

$p(O) = p(OO) = 0.6^2 = 0.36$

- $p(F=0 \mid I=0 \text{ e } M=\text{non } 0)$

$$= \frac{p(F=0 \text{ e } M=\text{non } 0 \mid I=0)}{p(M=\text{non } 0)}$$

$$= \frac{p(F=0 \text{ e } (M=A0 \text{ o } M=B0) \mid I=0)}{1-p(0)}$$

$$= \frac{p(F=0 \text{ e } M=A0 \mid I=0) + p(F=0 \text{ e } M=B0 \mid I=0)}{1-p(0)}$$

$$= \frac{p(F=0 \mid I=0 \text{ e } M=A0) \cdot p(M=A0) + p(F=0 \mid I=0 \text{ e } M=B0) \cdot p(B0)}{1-p(0)}$$

$$= \frac{\frac{1}{2} p(A0) + \frac{1}{2} p(B0)}{1-p(0)}$$

- $p(I=0 \mid F=\text{non } 0)$

$$= \frac{p(I=0 \text{ e } F=\text{non } 0)}{p(F=\text{non } 0)}$$

$$= \Big(p(I=0 \text{ e } F=\text{non } 0 \text{ e } M=AA) + p(I=0 \text{ e } F=\text{non } 0 \text{ e } M=A0) + \dots \text{ gli altri casi per } M \Big) \Big/ (1-p(0))$$

$$= \Big(p(F=\text{non } O \mid P=O \text{ e } M=AA)\cdot p(O)\cdot p(AA) + p(\text{" } \mid \text{" e } M=AO)\cdot p(O)\cdot p(AO) \dots \Big) \Big/ (1-p(O))$$

$$= \frac{\left(1\cdot p(AA)+\frac{1}{2}p(AO)+1\cdot p(BB)+\frac{1}{2}p(BO)+p(AB)\right)\cdot p(O)}{1-p(O)}$$

- $p(F=O \mid P=\text{non } O \text{ e } M=\text{non } O)$

$$= \frac{p(F=O \text{ e } P=\text{non } O \text{ e } M=\text{non } O)}{(1-p(O))^2}$$

$$= \Big(p(F=O \text{ e } P=AO \text{ e } M=AO) + p(F=O \text{ e } P=AO \text{ e } M=BO) + p(F=O \text{ e } P=BO \text{ e } M=AO) + p(F=O \text{ e } P=BO \text{ e } M=BO) \Big) \Big/ (1-p(O))^2$$

$$= \Big(p(F=O \mid P=AO \text{ e } M=AO)\cdot p(AO)^2 + p(F=O \mid P=AO \text{ e } M=BO)\cdot p(AO)\cdot p(BO) + p(F=O \mid P=BO \text{ e } M=AO)\cdot p(BO)\cdot p(AO) + p(F=O \mid P=BO \text{ e } M=BO)\cdot p(BO)^2 \Big) \Big/ (1-p(O))^2$$

$$= \frac{1}{4} \frac{\left(p(A0) + p(B0)\right)^2}{\left(1 - p(0)\right)^2}$$

- Se $x = p(F=0 \mid P=0 \text{ e } N=\text{nuovo})$ è il valore calcolato al secondo punto, viene

$$1 - (1-x)^4$$