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1. (U_1, U_2) forms an s.e.

$$P_1 = P(B_1)$$

$$= P(U_1)P(B_1|U_1) + P(U_2)P(B_1|U_2)$$

$$= \frac{1}{2} \left(\frac{3}{2+3} \right) + \frac{1}{2} \left(\frac{3}{4+3} \right)$$

$$= \frac{17}{35}$$