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| --- | --- | --- | --- | --- |
| **Independent events (3)** | **Complementary events (6)** | **Mutually exclusive events (4)** | **Non mutually exclusive events (4)** | **Conditional Probability (3)** |
| P(A) x P(B) = P(A∩B) | P(A) + P(A’) = 1 | P(A B) = P(A) + P(B) - 0 | P(A∪B) = P(A) + P(B) – P(A**∩**B) | P(A/B) = |
| P(having a birthday in December)  P(becoming a prefect) |  |  |  | A tree diagram is often useful for this |
| when the occurrence of one has no effect on the other | Late or not late | Picking a Spade and picking a Heart from a pack of cards | The probability of drawing a heart or a 6 from a pack of cards. | When the probability of one event is influenced by whether or not another event has occurred. |
| **Non independent events (1)** | P(A∩A') =0 |
| P(A) x P(B) ≠ P(A∩B) | If A doesn’t happen then A’ does happen. | events cannot both occur | events can both occur |
| events cannot both occur |
| **Risk (2)** | **Relative Risk (2)** | **Theoretical Probability (2)** | **Experimental Probability (2)** | **Actual Probability (2)** |
| The chance of an event occurring | Used to compare the risk of two groups | Predict based on a model | Predict using past records, simulation or observations | Usually unknown |
| Also known as absolute risk | You are 2.5 times more likely to die of cancer if you smoke | Tossing a coin and getting a head | Playing a game and recording the outcome | Also known as true probability |

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|  | **A**  **“The probability of event A occurring”** | |  |  |  |  | | --- | --- | --- | --- | |  | **A** | **A'** |  | | **B** |  |  |  | | **B'** |  |  |  | |  |  |  |  | |
|  | **A∩B**  **“A intersection B”**  **represents the probability of both A and B occurring.** | |  |  |  |  | | --- | --- | --- | --- | |  | **A** | **A'** |  | | **B** |  |  |  | | **B'** |  |  |  | |  |  |  |  | |
|  | **A∪B**  **“A union B”**  **represents the probability of A or B on their own or A and B together.** | |  |  |  |  | | --- | --- | --- | --- | |  | **A** | **A'** |  | | **B** |  |  |  | | **B'** |  |  |  | |  |  |  |  | |
|  | **A'**  **“A complement”**  **represents the probability of “not A” occurring** | |  |  |  |  | | --- | --- | --- | --- | |  | **A** | **A'** |  | | **B** |  |  |  | | **B'** |  |  |  | |  |  |  |  | |
|  | **(A∪B)' = A'∩B'**  **“A union B complement”**  **or**  **“A complement intersection B complement”**  **represents the probability of neither A nor B occurring.** | |  |  |  |  | | --- | --- | --- | --- | |  | **A** | **A'** |  | | **B** |  |  |  | | **B'** |  |  |  | |  |  |  |  | |