- **Subjective Probability**: The individual's personal estimate of the chance of loss.
- **Probability as the Degree of Belief**: In a statement.
- **Objective Probability**: The long-run relative frequency of an event based on the assumptions of an infinite number of observations and of no change in the underlying conditions.
- **Sample Space Definition**: The sample space is the set of all possible outcomes of an experiment, e.g., in the case of a fair die, {1, 2, 3, 4, 5, 6}.
- **Complementary Events**:
$$Pr(A) + Pr(\bar{A}) = 1$$
- **Mutually Exclusive Events**: There is no intersection between the two events
$$Pr(A \cap B) = 0$$
e.g., Māori and Chinese.
- **Conditional Probability Multiplication Rule**:
$$Pr(A \cap B) = Pr(A)Pr(B|A)$$
- **Conditional Probability Addition Rule**:
$$Pr(A \cup B) = Pr(A) + Pr(B) - Pr(A \cap B)$$
- **Independent Events**: The outcome of one event does not affect the outcome of the second event.
- **Independence Check** (true if):
$$Pr(B) \neq Pr(B|A)$$
or
$$Pr(A) \neq Pr(A|B)$$
- **Definitions of Diagnostic Tests**: Sensitivity, Specificity, False positive fraction, Positive Predictive Value, Negative Predictive Value
- **Sensitivity (Diagnostic Tests)**:
$$Pr(B|A)$$
The probability that a person with the disease has a positive test. Think of this as "the probability of a positive test result, given the person actually has the disease.
- **Specificity (Diagnostic Tests)**:
$$Pr(\bar{B}|\bar{A})$$
The probability that a person without the disease has a negative test. Think of this as "the probability of a negative test result, given the person does NOT have the disease.

- **Negative Predictive Value**:

$$Pr(\bar{A}|\bar{B})$$

The proportion of patients with negative test results who don't have the disease. The proportion of patients with negative test results who are correctly diagnosed.

- **False positive fraction (Diagnostic Tests)**:

$$1 - specificity = Pr(\bar{B}|\bar{A})$$

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- **Positive Predictive Value**:

$$Pr(A|B)$$

The proportion of patients with positive test results who have the disease. The proportion of patients with positive test results who are correctly diagnosed.