Probability distributions

The two videos in this lesson explain the key-features of probability distributions and cumulative probability distributions.

The first explains how a **probability distribution specifies the probabilities for each of the values** that a random variable may take. It also illustrates how a probability distribution can take the form of a **table, graph or equation**. Finally, it explains how for a **discrete** random variable the probability distribution is called a **probability mass function**, giving probabilities, while for a **continuous** random variable the probability distribution is called a **probability density function**, giving probabilities per unit of the random variable. To obtain probabilities for a continuous random variable the sum (or integral) of all probabilities over an interval have to be considered.

The second video shows how a **cumulative probability distribution** can be obtained from a probability distribution by summing the probabilities in the latter from the smallest up to the largest value of the random variable. Also cumulative probability distributions can exist in the form of a table, graph or an equation. Interestingly, the difference between discrete and continuous variables disappears for cumulative probability distributions: for both variables the cumulative distribution gives cumulative probabilities: the probability of an event lower than or equal to the specified value of the random variable. The second video ends by illustrating how the cumulative probability distribution is useful to find a cumulative probability relating to a specified value of the random variable, but also the reverse: to find the threshold value of the random variable at a given probability level.