Mean and variance of a random variable

Once a probability distribution is defined it is possible to calculate **summary statistics** like a mean and standard deviation **for a random variable**, even if you did not have actual observations for that variable. These two videos show how these statistics can be calculated for discrete random variables.

Next, it is shown what happens to the mean, variance and standard deviation when **two random variables** are **added or subtracted** and when a random variable is manipulated by **adding or multiplying with a constant**. Such operations occur frequently when dealing with real data. Examples of adding random variables are cases where the output of one model (e.g. a weather or an econometric model) is input for another (e.g. for hydrologic or macro-economic projections) or where different observations are combined to calculate a variable of interest (e.g. weight and height in a body-mass index). An examples of addition or multiplication with a constant could be applying a unit conversion to an observed variable (e.g. when converting a temperature in Celcius to Farenheit).