**Stats – Chapter 6**

**Probability distributions of Discrete Random Variables**

Definitions:

* **Random variable**

A RV is a numerical measurement of the outcome of a random phenomenon

**Notation:**

* + Use a capital letter for the variable
  + Use the same letter but lowercase for the **values** of the variable
  + E.g., X is heads in 3 tosses ; x = 2 is a possible value

The probability distribution of a RV specifies:

* + **Its possible values**
  + Table

    Description automatically generatedDiagram

    Description automatically generated**Their probabilities**

Text

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***Mean (or Expected Value) of a Probability Distribution***

Graphical user interface, text, application

Description automatically generatedThe mean μ of the probability distribution for that random variable is the value we would get if we repeatedly observe its outcome, in the long run, for the average of those values (as seen before)

This mean is aka **weighted average**, as the outcomes are not equally distributed

***Variance and Standard Deviation***

The standard deviation of a probability distribution, denoted by σ, measures the variability from the mean

Larger values for σ correspond to greater variability

(formulas here, later)

**Probability distributions of Discrete Random Variables**

Text, letter

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Description automatically generatedA RV is **continuous** when its possible values form an interval (rather than distinct values)

Chart, line chart

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**Properties and comments**

* The probability of a single value is 0
* The interval can be infinite

f(x) is **not a probability** (i.e. it can be > 1)