Introduction.

Probability distributions are employed in predictive and prescriptive models to model uncertainty and inform decision-making by capturing the relative likelihood or frequency of each possible value within a given range.

The two main types to create probability distributions:

* **Empirical Distributions**: These are based on collected assessments of experts , historical data, or data generated from observations. They reflect the actual distribution of the data as observed in practice.
* **Standard Probability Distributions**: These refer to theoretical models of empirical distributions that possess well-defined statistical properties. Examples include the normal distribution, binomial distribution, and Poisson distribution. These distributions serve as foundational models in statistical analysis and probability theory. They provide a framework for understanding the behavior of random variables and enable the calculation of probabilities and critical values and also can be applied in small to accurately model various real-world phenomena.

Employing these distributions in models helps capture the underlying uncertainty and variability in data, allowing for more informed and reliable decision-making.

Use cases: