BEFORE YOU READ

Nine continuous families

Different continuous distributions model different kinds of real-world quantities. Match the phenomenon to the family.

L0 **Continuous distributions** f(x)

- L1 **Normal** heights, test scores, measurement errors — bell curve
- L1 **Uniform** every value in a range equally likely — rounding errors
- L1 **Exponential** waiting times between events — memoryless
- L1 **Beta** probabilities, proportions, percentages — on [0, 1]
- L1 **Gamma** waiting time for several events — generalizes exponential
- L1 **Chi-squared** hypothesis tests, goodness of fit — sum of squared normals
- L1 **Student's t** small samples, unknown variance — heavier tails
- L1 **Weibull** lifetimes and failure rates — reliability
- L1 **Lognormal** income, particle sizes, stock prices — log is normal

TAKEAWAY

Same tools, different shapes

All continuous distributions share densities and integration-based calculations like expected value and variance; they differ in shape, support, parameters and the phenomena they fit.