DISTRIBUTIONS

Discrete and continuous, side by side

Counting or measuring decides the type, and the type decides how probabilities are computed.

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COMPARED

	DISCRETE	CONTINUOUS
OUTCOMES	countable: things you can list one by one	a continuum: infinitely many values in any interval
DATA LOOK LIKE	whole numbers from counting	decimals from measuring
A SINGLE VALUE	has a non-zero probability	has probability 0
DESCRIBED BY	a probability mass function (PMF)	a probability density function (PDF)
PROBABILITIES BY	summing probabilities	integrating over intervals

For $X \sim U(0, 10)$, $P(X < 3) = P(X \leq 3) = 0.3$: in a continuous model the boundary point adds nothing.

	DISCRETE	CONTINUOUS
ON A GRAPH	distinct bars or points	a smooth curve where area is probability
FAMILIES	binomial, Poisson, geometric	normal, exponential, uniform