

JOINT CUMULATIVE DISTRIBUTION FUNCTIONS

Why

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Definition

Let $X,Y:\Omega\to \mathbf{R}$ be random variables on probability space $(\Omega,\mathcal{F},\mathbf{P})$. The joint cumulative distribution function denoted $F_{X,Y}:\mathbf{R}^2\to [0,1]$ is defined by $F_{X,Y}(s,t)=\mathbf{P}[X\leq s,Y\leq t]$.

In general the *joint cdf* for a random vector $X : \Omega \to \mathbb{R}^n$ is $F_X : \mathbb{R}^d \to [0,1]$ defined by $F_X(t) = \mathbb{P}[X \le t]$ where $x \le t$ means $x_i \le t_i$ for all i.

¹Future editions will include.

