Marginal Distributions

1 Why

2 Definition

The marginal distribution is

2.1 Notation

Let R denote the set of real numbers. Let $A_1, \ldots, A_n$ be a sequence of non-empty finite sets. Let $A = \prod_{i=1}^{n} A_i$ Let $p : A \to R$ be a distribution on A. We denote the ith marginal distribution of p by $p_i : A_i \to R$ For $i = 1, \ldots, n$, p_i satisifes

$$p_i(b) = \sum_{a_i = b} p(a)$$

for each $b \in A_i$.

Similarly we can define the marginal over i and j for $i, j = 1, \ldots, n$ and $i \neq j$ by

$$p_{ij}(b, c) = \sum_{a_i = b, a_j = c} p(a)$$

for every $b \in A_i$ and $c \in A_j$.