

## MAXIMUM LIKELIHOOD DISTRIBUTION GRAPHS

## Why

How to select distribution graphs.<sup>1</sup>

## Definition

Let (G,A) be a typed graph on  $\{1,\ldots,n\}$ . Let  $S \subset \{1,\ldots,n\}$ . Let  $x^1,\ldots,x^n$  be a dataset in  $A_S = \prod_{j\in S} A_j$  (see Function Graphs). The observation likelihood for this dataset is the observation distribution likelihood of the dataset  $\prod_{i=1}^n p_S(x^i)$ .

A maximum likelihood distribution graph is one that maximizes the observation likelihood. The maximum likelihood distribution graph with respect to a parametric distribution family is the member of the family that maximizes the observation likelihood.

<sup>&</sup>lt;sup>1</sup>Future editions will modify.

