

## MAXIMUM LIKELIHOOD DENSITIES

## Why

We provide a principle for density selection based on maximizing the probability of the dataset.

## **Definition**

Let  $(x^1, \ldots, x^n)$  be a dataset in  $\mathbb{R}^d$ . The density likelihood for this dataset is

$$\prod_{k=1}^{n} f(x^k).$$

A maximum likelihood density is a density which maximizes the density likelihood among all densities. A maximum likelihood density selector is a density selector that associates a dataset with a maximum likelihood density.

