

## **ESTIMATES**

## Why

We want to guess random variables.

## **Definition**

Let  $(\Omega, \mathcal{A}, \mathbf{P})$  be a probability space. Let  $x : \Omega \to V$  be a random variable. An *estimate* or *prediction* or *guess* for x is a value  $v \in V$ . Some authors call the selection of an estimate estimation or an estimation problem.

## Cost functions

A cost function for an estimate in V is a function  $C: V \times V \to \mathbb{R}$ . A cost function is also known as a risk function. The cost of an estimate is a random variable  $c: \Omega \to \mathbb{R}$  which is  $c(\omega) = C(x(\omega), \xi)$ .

