



### Why

What if our set of outcomes is the real line,  $\mathbf{R}$ ?

### Definition

The principal difficulty is assigning nonzero numbers to infinitely many elements of a set. The solution is instead to assign probabilities to the *events* of outcomes, not to the individual outcomes (elementary events, real numbers), themselves.

A *probability density* (or *probability density function* (*pdf*)) is a function  $f : \mathbf{R} \rightarrow \mathbf{R}$  satisfying  $f \geq 0$  and  $\int f = 1$ .



