Bernoulli Distribution — Introduction

Weather $\rightarrow$ bad
(w) $\rightarrow$ good
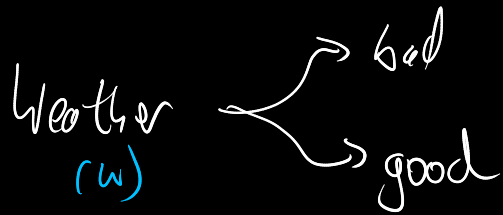
$W \in \{ \overset{0}{Bad}, \overset{1}{Good} \}$

$\hookrightarrow$ Bernoulli

$W \sim Bernoulli(\theta)$

θ ... probability of good water

(e.g $\theta = 0.8$)

$p(w) = \theta^{w} \cdot (1-\theta)^{(1-w)}$

dataset $D = \{ G, B, B, G, G, G, \ldots \} \; (= \{ 1, 0, 0, 1, 1, 1, \ldots \}$

$P(D) = \prod_{i=0}^{N-1} p(W = w^{[i]}) = \prod_{i=0}^{N-1} \theta^{w^{[i]}} (1-\theta)^{(1-w^{[i]})}$

$= \theta^{1} \cdot (1-\theta)^{(1-1)} \cdot \theta^{0} \cdot (1-\theta)^{(1-0)} \cdot \ldots$

$= \theta \qquad \cdot \quad (1-\theta) \quad \cdot \ldots$