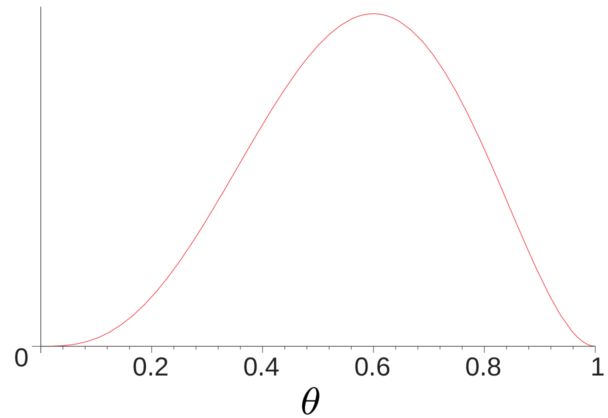
Let $X_1, X_2, \ldots$ be independent random variables with distribution $Ber(\theta)$ under the model P_θ, and let $\mathcal{P} = \{P_\theta : 0 \le \theta \le 1\} \simeq [0,1]$.

$A_5 = \{X_1 = 1, X_2 = 0, X_3 = 1, X_4 = 1, X_5 = 0\} = \langle 10110 \rangle$

$lik(\theta) \propto \theta^3 (1-\theta)^2$

$\widehat{\theta}_{ML} = \frac{3}{5} = 0.6$

$LR([0, \frac{1}{2}]) \approx 0.904$

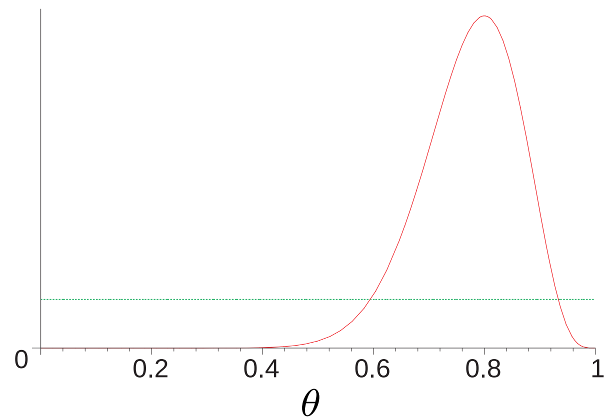


$A_{20} = \langle 10110111101111110111 \rangle$

$lik(\theta) \propto \theta^{16} (1-\theta)^4$

$\widehat{\theta}_{ML} = \frac{16}{20} = 0.8$

$LR([0, \frac{1}{2}]) \approx 0.021$



$$L : \mathcal{P} \times [0,1] \to [0,\infty) \quad \text{defined by} \quad L(P_\theta, d) = \begin{cases} 5\,(d-\theta) & \text{if } d \geq \theta \\ \theta - d & \text{if } d \leq \theta \end{cases}$$

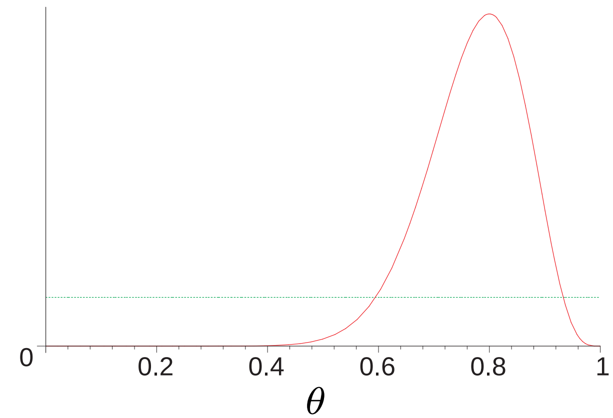
$$A_{20} = \langle 10110111101111110111 \rangle$$

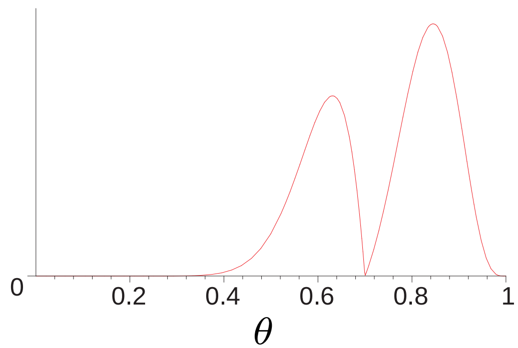
minimax: $d = \frac{5}{6}\,0 + \frac{1}{6}\,1 = \frac{1}{6} \approx 0.167$

$\text{LRM}_{0.15}$: $d \approx \frac{5}{6}\,0.595 + \frac{1}{6}\,0.933 \approx 0.651$

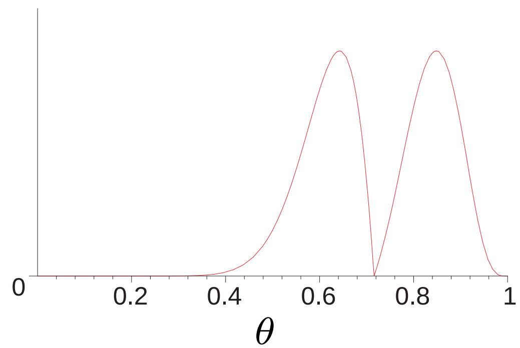
MLD: $d = \widehat{\theta}_{ML} = 0.8$

MPL: $d \approx 0.716$

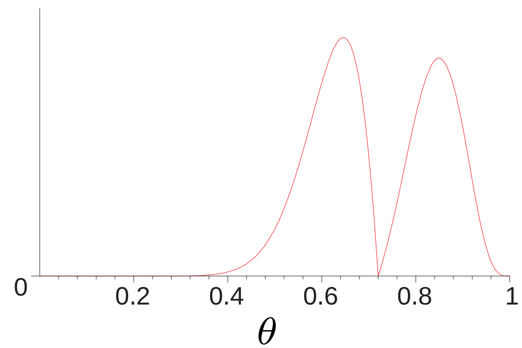




$d = 0.7$



$d \approx 0.716$



$d = 0.72$

	PRE-DATA (random variable X)		POST-DATA ($X = x$ observed)
BAYESIAN (prior π on $\mathcal{P}$)	$E_\pi[E_P[L(P, \delta(X))]]$	$\leftrightarrow$ (temporal coherence)	$E_\pi[lik(P)\, L(P, d)]$
NON-BAYESIAN (prior ignorance)	$\sup_{P \in \mathcal{P}} E_P[L(P, \delta(X))]$	$\not\leftrightarrow$	$\sup_{P \in \mathcal{P}} lik(P)\, L(P, d)$
	(minimax risk)		(MPL)