$$f(\theta) \propto c$$ "Non-informative prior"

"flat prior"

$$X_1 \dots X_n \sim N(\theta, \sigma^2)$$ известна

$$f(\theta) \propto c$$

$$\int f(\theta)\, d\theta = \infty$$ "Improper prior"

$$f(\theta|X) \propto f(X|\theta) \cdot f(\theta) \propto f(X|\theta)$$

$$f(\theta|X) \propto \prod_{i=1}^{n} c\, e^{-\frac{1}{2\sigma^2}(x_i-\theta)^2} =$$

$$= c\, e^{-\frac{1}{2\sigma^2} \underbrace{\sum_{i=1}^{n} (x_i-\theta)^2}} =$$

$$= c\, e^{-\frac{1}{\frac{2\sigma^2}{n}} \left(\frac{\sum_i x_i^2}{n} - 2\theta \frac{\sum_i x_i}{n} + \frac{n\theta^2}{n} \right)} =$$

$$= c\, e^{-\frac{1}{2 \cdot \frac{\sigma^2}{n}} \left(\overline{X^2} \overset{+(\bar{X})^2}{-} 2\theta \bar{X} + \overset{-(\bar{X})^2}{\theta^2} \right)} =$$

$$= c\, e^{-\frac{1}{\frac{2\sigma^2}{n}} \left((\bar{X}-\theta)^2 + \underbrace{\overline{X^2} - (\bar{X})^2} \right)} =$$

$$= C_1 e^{-\frac{1}{2}\frac{(\bar{X}-\theta)^2}{\frac{\sigma^2}{n}}}$$

$$\theta | X \sim N\left(\bar{X}, \frac{\sigma^2}{n}\right)$$

$$X_1 \ldots X_n \sim Bern(p)$$

$\underline{f(p) = 1}$ неинвар-о к преобр.

$$g(p) = \ln\left(\frac{p}{1-p}\right)$$

$$f_{g(p)}(g) = \frac{e^g}{(1+e^g)^2}$$

Априорное распред. Джеффриса

$f(\theta) \propto \sqrt{I(\theta)}$ – один пар.

$\sqrt{|I(\theta)|}$ – неск. пар.

$$I(p) = \frac{1}{p(1-p)}$$

$$f(p) \propto \sqrt{\frac{1}{p(1-p)}} = p^{-\frac{1}{2}}(1-p)^{-\frac{1}{2}}$$