

S. 104/2

$$H_0: p = 0,3$$

$$H_1: p > 0,3 \quad (p = 0,5)$$

a) $n = 10$

$$g = 4; 5; 6; 7; 8$$

$$K = \{g, \dots, 10\}$$

Risiko 1. Art:

Risiko 2. Art:

b) $\alpha' + \beta'$:

$$\begin{aligned} \alpha' &= P_{H_0}(Z \geq 4) = 1 - P_{H_0}(Z \leq 3) \\ &= 1 - 0,64961 = 0,35039 = \underline{35,04\%} \end{aligned}$$

$$\begin{aligned} \beta' &= P_{H_1}(Z \leq 3) = \\ &= 0,1788 \times \underline{17,19\%} \end{aligned}$$

$$52,23\%$$

$$\begin{aligned} \alpha' &= P_{H_0}(Z \geq 5) = 1 - P_{H_0}(Z \leq 4) \\ &= 1 - 0,84973 = 0,15026 \approx \underline{15,03\%} \end{aligned}$$

$$\begin{aligned} \beta' &= P_{H_1}(Z \leq 4) \\ &= 0,37695 \times \underline{37,70\%} \end{aligned}$$

$$53,73\%$$

$$\begin{aligned} \alpha' &= P_{H_0}(Z \geq 6) = 1 - P_{H_0}(Z \leq 5) \\ &= 1 - 0,95265 = 0,04735 \approx \underline{4,74\%} \end{aligned}$$

$$\begin{aligned} \beta' &= P_{H_1}(Z \leq 5) \\ &= 0,62305 \approx \underline{62,31\%} \end{aligned}$$

$$67,05\%$$

$$\begin{aligned} \alpha' &= P_{H_0}(Z \geq 7) = 1 - P_{H_0}(Z \leq 6) \\ &= 1 - 0,98941 = 0,01059 \approx \underline{1,06\%} \end{aligned}$$

$$\begin{aligned} \beta' &= P_{H_1}(Z \leq 6) \\ &= 0,82813 \approx \underline{82,81\%} \end{aligned}$$

$$83,87\%$$

$$\begin{aligned} \alpha' &= P_{H_0}(Z \geq 8) = 1 - P_{H_0}(Z \leq 7) \\ &= 1 - 0,99841 = 0,00159 \approx \underline{0,16\%} \end{aligned}$$

$$\begin{aligned} \beta' &= P_{H_1}(Z \leq 7) \\ &= 0,94531 \approx \underline{94,53\%} \end{aligned}$$

$$94,69\%$$

b) \Rightarrow für $g = 4$ ist $\alpha' + \beta'$ am kleinsten