

TESTIRANJE HIPOTEZA

4. Dž. 3) zadatci

165, 170, 192, 195, 198, 200, 205, 210

$$\alpha = 0,05$$

jednostrani test

$$\mu_0 = 200$$

$$H_0: \mu \geq 200$$

$$H_1: \mu < 200$$

$$\bar{x} = \frac{1}{n} \sum_{i=1}^n x_i = 198,5$$

t-test

$$T = \frac{\bar{x} - \mu_0}{s/\sqrt{n}}$$

↓

$$T = -2,04 < -t_{1-\alpha}$$

$$\alpha' = 0,1 = t_{1-\alpha} = -1,895$$

Integrirana sloboda

$$T < -t_{1-\alpha} \Rightarrow H_0 \text{ se odbacuje}$$

5) 10 000 bacanja novčića, pisano 5120

$$m = 5120$$

dvostrani test

$$H_0: p = 0,5$$

$$p_0 = 0,5$$

$$H_1: p \neq 0,5$$

H_0 prihvaćamo ako

$$|u| < u_{1-\frac{\alpha}{2}}$$

$$2,4 < u_{1-\frac{\alpha}{2}}$$

$$2,4 < u_{0,992}$$

$$u = \left(\frac{m}{n} - p_0 \right) \sqrt{\frac{n}{p_0 q_0}} = 2,4$$

$$1 - \frac{\alpha}{2} = 0,992$$

$$2 - \alpha = 1, \dots$$

$\alpha = 0,016 \rightarrow$ NIKO ZNAČAJNOSTI, s kojom prihvaćamo ispravnost

- usporedbe dviju populacija

2007. PZI 10)

		1	2	3	4	5
n=76	A	7	16	28	11	11
m=78	B	10	13	30	16	9

$$\rightarrow \bar{x} = \frac{\sum n_i x_i}{n} = 3,08$$

$$\rightarrow \bar{y} = 3,01$$

$$s_x^2 = \frac{1}{n-1} \sum (x_i - \bar{x})^2 = 1,354$$

$$s_y^2 = 1,363$$

$\alpha = ?$

dvostrani test

$$H_0: \bar{x} = \bar{y}$$

$$H_1: \bar{x} \neq \bar{y}$$

$$T = \frac{\bar{x} - \bar{y}}{s_z} \sqrt{\frac{n \cdot m}{n+m}} = \dots = 0,3518$$

$$s_z^2 = \frac{1}{n+m-2} [(n-1)s_x^2 + (m-1)s_y^2] = 1,358$$

dvostrani test

$$|T| < t_{1-\frac{\alpha}{2}}$$

$n+m-2$ stupnjeva slobode = 152

$$\Rightarrow \alpha = 0,7 = 70\%$$

H1 - kvadrat test (χ^2)

da li se utvrdi razlika po nekoj razdobi - H1 - kvadrat

26.

800 znameniti broja π

x_i	n_i	p_i	$n \cdot p_i$	$\frac{(n_i - n \cdot p_i)^2}{n \cdot p_i}$
0	74	0,1	80	0,45
1	92	0,1	80	1,8
2	83	0,1	80	
3	79	0,1	80	
4	80	0,1	80	
5	73	0,1	80	
6	77	0,1	80	
7	75	0,1	80	
8	76	0,1	80	0,2
9	91	0,1	80	1,5125

$$n = 800$$

$$m = 10$$

$$\alpha = 0,1$$

$$p = 0,9$$

$$\chi^2 = 5,125$$

$$\chi_{krit}^2 = 14,664$$

$$f = m - r - 1 = 9$$

stupnjevi slobode

ako $\chi^2 < \chi_{krit}^2 \Rightarrow$ PRIHVATIMO HIPOTEZU

to znači da se podaci ravnoaju po jednolikoj razdobi

7.32. 14)

$$\alpha = 0,2$$

$$n = 250$$

X_j	\bar{x}_j	h_j	p_j	$h_j p_j$	$\frac{(h_j - n p_j)^2}{n p_j}$
0-5	2,5	15	0,0665	≈ 16	.
5-10	7,5	75	0,2995	≈ 69	.
10-15	12,5	100	0,4009	≈ 101	.
15-20	17,5	50	0,2005	≈ 51	.
20+	22,5	10	0,0399	≈ 10	.

$$\chi^2 = 0,6957$$

$$\alpha = \bar{x} = \frac{\sum x_j h_j}{n} = 11,8$$

$$\sigma^2 = S^2 = \frac{1}{n-1} \sum (x_j - \bar{x})^2 h_j$$

$$\sigma = \sqrt{21,619}$$

$$1) P(0 < X < 5) = P\left(\frac{0 - \alpha}{\sigma} < \bar{x} < \frac{5 - \alpha}{\sigma}\right) = \frac{1}{2} \left[\Phi^*\left(\frac{5 - \alpha}{\sigma}\right) - \Phi^*\left(\frac{0 - \alpha}{\sigma}\right) \right] = 0,0665$$

$$\chi_c^2 = 0,6957 < \chi_{krit}^2 = 3,219$$

✓

prihvaćamo hipotezu

$$f = m - r - 1 = 5 - 2 - 1 = 2$$

$$\alpha = 0,2; p = 0,8$$

Spojanje razreda:

- ako ima manje od 5 elementa - sangebno razreda spojimo

1 }
3 } 9
5 }
10 }
20 } 21
1 }
30 }
5 } 7
2 }