

取消

完成

随机变量之差の方差

$Var(X) = E(X - u_x)^2$

$= \sum \frac{x^2}{N} - (\frac{\sum x}{N})^2$

$\sigma_{x+y}^2 = E((x+y - u_{x+y})^2)$

$= \sum \frac{(x+y)^2}{N} - \frac{(\sum (x+y))^2}{N}$

$= \sum \frac{x^2}{N} + 2\sum \frac{xy}{N} + \sum \frac{y^2}{N} - \frac{(\sum x + \sum y)^2}{N}$

$= \sum \frac{x^2}{N} - u_x^2 + \sum \frac{y^2}{N} - u_y^2 + \frac{2\sum xy}{N} - 2u_x u_y$

$= \sigma_x^2 + \sigma_y^2$

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不理解也没关系 你可以先记住公式再说
value and just assume that these are tools that you can use.

low fat diet. Another 100 randomly assigned obese people are assigned to group 2 and put on a diet of approximately the same amount of food, but not as low in fat. After 4 months, the mean weight loss was 9.31 lbs. for group 1 ($s=4.67$) and 7.40 lbs. ($s=4.04$) for group 2.

Low-Fat: $\bar{x}_1 = 9.31$ $s_1 = 4.67$ Control: $\bar{x}_2 = 7.40$ $s_2 = 4.04$

$\bar{x}_1 - \bar{x}_2 = 9.31 - 7.40 = 1.91$ $H_1: \mu_1 - \mu_2 > 0 \Rightarrow \mu_{\bar{x}_1 - \bar{x}_2} > 0$

$H_0: \mu_1 - \mu_2 = 0 \Rightarrow \mu_{\bar{x}_1 - \bar{x}_2} = 0 \Rightarrow \mu_{\bar{x}_1 - \bar{x}_2} = 0$

$\alpha = 95\%$

$\sigma_{\bar{x}_1 - \bar{x}_2} = \sqrt{\frac{(4.67)^2}{100} + \frac{(4.04)^2}{100}} = 0.617$

两个样本均值之差超过1.02的概率只有5%
there's a only a 5% chance of having a difference between the means of these two samples

贝努利分布

$\sigma^2 = p(1-p)$

两样本占比之差的抽样分布

$\sigma_{x_1 - x_2} = \sigma_{x_1} + \sigma_{x_2}$

$z = \frac{\bar{x} - \mu}{\sigma_{\bar{x}}}$

进行估计

$\sigma_{\bar{p} - \bar{p}_2} = \sqrt{\frac{p(1-p)}{n} + \frac{p_2(1-p_2)}{n}}$

检验

$p_1 = p_2 = p$

更佳解

$\sigma_{\bar{p} - \bar{p}_2} = \sqrt{\frac{2p(1-p)}{n}}$

$p = \frac{p_1 + p_2}{2}$

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