

Day 2 distributions

Binomial Distribution

In the experiment where there are only two out come of the result. An example getting the value 6 in ludo.

Question: What is the probability of getting 6 in ludo. $P=1/6$ $q=1-p$ $q=5/6$

Now given the probability of getting 6 in ludo is P , if you though how many 6 you get in the game. In the game you played 50 times.

Question : Given that you played game 6 time what is the probability that you get 5 sixes. This can be found using binomial distribution function.

$$P(X = k) = \binom{n}{k} p^k (1 - p)^{n-k}$$

lets solve this.

We can also used r function can `dbinom(success, size=20, prob=.3)`

Normal Distribution

$$P(x) = \frac{1}{\sigma\sqrt{2\pi}} e^{-(x-\mu)^2/2\sigma^2}$$

`rnorm(100000,1,5),main = ““,xlab =”“)`

Poisson Distribution

$$P(x) = \frac{e^{-\lambda} \lambda^x}{x!}$$

`rpois(100000,4),main = ““,xlab =” “)`

Anova

$$t = \mu_1 - \mu_2 / \sqrt{(\sigma^2 * (1/N_1 + 1/N_2))}$$

pooled S

$$\sigma^2 = ((N_1 - 1) * s_1^2 + (N_2 - 1) * s_2^2) / (N_1 + N_2 - 2)$$

```
teenage_birth <- read.csv("../data/Percentage_teen_birth.csv",header = T)
model1<-aov(value~State.group,teenage_birth)
summary(model1)
```

```
##              Df Sum Sq Mean Sq F value    Pr(>F)
## State.group   3   333.1   111.03    21.91 5.83e-09 ***
## Residuals    46   233.1     5.07
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```