

# Intro a Estadística - Ayudantía

Martes 26/04/16.

1)  $T =$  "tpo. en que demoran alumnos en un cross"

$$T \sim \text{Normal}(\mu = 4.5, \sigma^2 = 2.25) \quad * \sigma = \sqrt{2.25} = 1.5$$

a)  $P(T < 4)$

$$= P\left(\frac{T - \mu}{\sigma} < \frac{4 - \mu}{\sigma}\right)$$

$$= P\left(Z < \frac{4 - 4.5}{1.5}\right) = P\left(Z < -\frac{0.5}{1.5}\right)$$

$$= P\left(Z < -\frac{1}{3}\right)$$

$$\cong \Phi(-0.333) = 1 - \Phi(0.333)$$

$$= 1 - 0.6293 = 0.3707$$

b)  $P(3.5 \leq T \leq 5)$

$$= P(T \leq 5) - P(T \leq 3.5)$$

$$= P\left(Z \leq \frac{5 - 4.5}{1.5}\right) - P\left(Z \leq \frac{3.5 - 4.5}{1.5}\right)$$

$$= P\left(Z \leq \frac{1}{3}\right) - P\left(Z \leq -\frac{2}{3}\right)$$

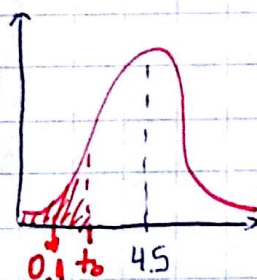
$$= \Phi\left(\frac{1}{3}\right) - \Phi\left(-\frac{2}{3}\right)$$

$$= \Phi\left(\frac{1}{3}\right) - (1 - \Phi\left(\frac{2}{3}\right))$$

$$\cong \Phi(0.33) - 1 + \Phi(0.66)$$

$$= 0.6293 - 1 + 0.7454 = 0.3747$$

c)



$$P(T \leq t_0) = 0.1$$

$$= P\left(Z \leq \frac{t_0 - 4.5}{1.5}\right) = 0.1$$

$$= \Phi\left(\frac{t_0 - 4.5}{1.5}\right) = 0.1$$

Y sabemos  $\Phi\left(\frac{t_0 - 4.5}{1.5}\right) = 1 - \Phi\left(\frac{4.5 - t_0}{1.5}\right) = 0.1$

$$\Rightarrow 0.9 = \Phi\left(\frac{4.5 - t_0}{1.5}\right)$$

tabla  $\Rightarrow \frac{4.5 - t_0}{1.5} = 1.29 \Leftrightarrow t_0 = 2.565$

d)  $X$ : "cantidad de alumnos que demoran entre 35 y 5 mins en un cross"

$$X \sim \text{Binomial}(n=20, p=0.3747)$$

$$P(X=3) = \binom{20}{3} (0.3747)^3 (0.6253)^{17}$$