3. *t* test for the population correlation coefficient \( \rho \)

- How do we test if a correlation coefficient is statistically significant?

  - e.g., \( H_0: \rho = 0 \)

\[ t = \frac{r - \rho_{hyp}}{\sqrt{(1 - r^2)/(n - 2)}} \]

**H_0: \rho = 0**

- The sampling distribution of the correlation coefficient \( r \) is symmetrical and approximately normal when the population correlation \( \rho \) is zero
- When \( \rho = 0 \), the sampling distribution is the \( t \) distribution with \( n-2 \) degrees of freedom
- \( t \) statistic for a single population correlation coefficient: