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Hypothesis Testing for a Correlation

Now let's consider hypothesis testing to determine whether the correlation between two variables is statistically different from zero. The population parameter that represents a correlation is ρ and the correlation coefficient *r* is the sample statistic that estimates ρ. The null hypothesis for a test of a correlation coefficient is that ρ equals 0, and the alternative hypothesis is that ρ is not equal to 0. Rejecting the null hypothesis means that evidence suggests the true population correlation is statistically different from 0.

Keep in mind that a p-value doesn't measure the magnitude of the association. To determine the strength of the association between the two variables, you need to focus on *r*, the sample correlation, to see whether it's meaningfully large. When you interpret the correlation, be cautious about the effect of large sample sizes. As with many statistics, very large sample sizes can result in small p-values. In practice, with a large enough sample size, you would almost always reject the hypothesis that ρ is equal to 0, even if the value of your correlation is small for all practical purposes.

So, what constitutes a large correlation? Depending on the type of data and the field of study, standards regarding the size of correlations might vary.

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