# Type I Error Definition

A Type I error, in hypothesis testing, refers to the incorrect rejection of a true null hypothesis. To determine the correct answer, I need to examine each option carefully in relation to this definition.

## Analysis of Options:

\*\*(A) We conclude that there is not an effect in the population when in fact there is.\*\*

This describes failing to reject a null hypothesis when it is actually false, which is the definition of a Type II error, not a Type I error.

\*\*(B) We conclude that the test statistic is significant when in fact it is not.\*\*

This aligns with the concept of a Type I error, as it suggests rejecting the null hypothesis incorrectly, but it's framed in terms of test statistics rather than population effects.

\*\*(C) The data we have typed into SAS is different from the data collected.\*\*

This describes a data entry error, not a statistical inference error. This is unrelated to Type I errors.

\*\*(D) We conclude that there is an effect in the population when in fact there is not.\*\*

This precisely describes a Type I error - rejecting the null hypothesis (concluding there is an effect) when the null hypothesis is actually true (there is no effect).

## Answer:

The correct answer is \*\*(D) We conclude that there is an effect in the population when in fact there is not.\*\*

This option correctly identifies a Type I error as falsely concluding the presence of an effect (rejecting H₀) when no such effect exists (H₀ is true).