

Assumptions for Inference

AP Statistics

The “Big Three” Assumptions

Before performing a t-test or z-test, we must check:

1. **Random:** Data must come from a random sample or randomized experiment.
2. **Independent:** The 10% condition ($n \leq 0.10N$) when sampling without replacement.
3. **Normal/Large Sample:** * Means: $n \geq 30$ or population is normal.
 - ▶ Proportions: $np \geq 10$ and $n(1 - p) \geq 10$.

Why do we check?

“To generalize our results to a larger population, we must ensure our sample is representative and our sampling distribution is approximately Normal.”

Normal Condition for Means

If $n < 30$ and we don't know the population distribution: * Check the sample data for strong skewness or outliers. * Plot a histogram or Normal Probability Plot.