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The ANOVA Hypothesis

When you test whether differences are statistically significant, you want to know whether the differences among the means in your sample are larger than what would occur by chance if the population means really are equal. Small differences between sample means are usually present regardless, due to random sampling. The ANOVA test helps you determine whether the differences are large enough to indicate that the population means are different.

With ANOVA, the null hypothesis is that the population means are equal. So in the case of comparing the sale price of homes with different heating qualities, the null hypothesis is that the mean SalePrice is equal for all four levels of heating qualities, Average/Typical, Excellent, Fair, and Good. The alternative hypothesis is that not all the population means are equal. In other words, for at least one heating quality, the mean SalePrice is different from the others. If any one of the four means is different, you reject the null hypothesis.

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