Chapter 16

• Kruskal-Wallis test. Nonparametric analog of the ANOVA F-test. k samples of sizes $n_1, n_2, ..., n_k$ are independent with means $\mu_1, \mu_2, ..., \mu_k$. Hypothesis

$$H_0 : \mu_1 = \mu_2 = ... = \mu_k$$

$$H_1 : \mu_i \neq \mu_j \text{ for at least one pair } (i, j)$$

Observations are replaced by ranks. Let $R_1, R_2, ..., R_k$ be sums of ranks in the samples. Test statistic is (let $n = n_1 + n_2 + ... + n_k$)

$$H = \frac{12}{n(n+1)} \sum_{i=1}^{k} \frac{R_i^2}{n_i} - 3(n+1).$$

$H \sim \chi_{k-1}^2$ under H_0. If $H \geq \chi_{\alpha, k-1}^2$, then H_0 is rejected.

Chapter 17

• Control chart categories: variables and attributes (proportion defective).