**Chapter 19**

Nonparametric method

The median annual income for college graduates with a bachelor’s degree is $37,700(the New York Times Almanac, 2006) Data (in thousands of dollars) for a sample of college graduates with a bachelor’s degree working in the Chicago area are shown. Use the sample data to test Hₒ: median ≤37.7 and H𝑎: median > 37.7 for the population f college graduates with a bachelor’s degree working in the Chicago area. Use a .05 level of significance. What is conclusion?

|  |  |
| --- | --- |
| **Income** |  |
| 47.8 |  |
| 47.2 |  |
| 55.5 |  |
| 41.2 |  |
| 21.3 |  |
| 42.4 |  |
| 51.9 |  |
| 32.8 |  |
| 30.2 |  |
| 38.5 |  |
| 41.7 |  |
| 42.6 |  |
| 127.8 |  |
| 45.7 |  |
| 42.4 |  |
| 25.0 |  |
| 25.3 |  |
| 24.4 |  |
| 60.6 |  |
| 31.1 |  |
| 31.4 |  |
| 105.3 |  |
| 73.7 |  |
| 37.7 |  |
| 61.2 |  |
| 43.2 |  |
| 39.3 |  |
| 69.0 |  |
| 43.4 |  |
| 91.0 |  |
| 56.9 |  |
| 38.8 |  |
| 25.2 |  |
| 30.4 |  |
| 23.8 |  |
| 36.2 |  |
| 65.0 |  |
| 25.1 |  |
| 34.9 |  |
| 23.6 |  |
| 55.2 |  |
| 30.0 |  |
| 68.4 |  |
| 91.1 |  |
| 34.1 |  |
| 76.7 |  |
| 38.0 |  |
| 48.7 |  |
| 37.7 |  |
| 56.1 |  |

**#25**

The national Association of Home Builders provided data on the cost of the most popular home remodeling projects. Use the Mann-Whitney-Wilcoxon test to see whether it can be concluded that the cost of kitchen remodeling differs from the cost of master bedroom remodeling. Use a .05 of significance.

**Kitchen Bedrooms**

|  |  |
| --- | --- |
| 25,200 | 18,000 |
| 17,400 | 22,000 |
| 22,800 | 26,400 |
| 21,900 | 24,800 |
| 19,700 | 26,900 |
| 23,000 | 17,800 |
| 19,700 | 24,600 |
| 16,900 | 21,000 |
| 21,800 |  |
| 23,600 |  |

**#20**

The following were collected for the Master Blend Coffee production process. The data show the filling weights based on samples of 3-pound cans of coffee. Use these data to construct the Ẋ and R charts. What conclusions can be made about the quality of the production process?

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sample** | **Obs 1** | **Obs 2** | **Obs 3** | **Obs 4** | **Obs 5** |
| 1 | 3.05 | 3.08 | 3.07 | 3.11 | 3.11 |
| 2 | 3.13 | 3.07 | 3.05 | 3.10 | 3.10 |
| 3 | 3.06 | 3.04 | 3.12 | 3.11 | 3.10 |
| 4 | 3.09 | 3.08 | 3.09 | 3.09 | 3.07 |
| 5 | 3.10 | 3.06 | 3.06 | 3.07 | 3.08 |
| 6 | 3.08 | 3.10 | 3.13 | 3.03 | 3.06 |
| 7 | 3.06 | 3.06 | 3.08 | 3.10 | 3.08 |
| 8 | 3.11 | 3.08 | 3.07 | 3.07 | 3.07 |
| 9 | 3.09 | 3.09 | 3.08 | 3.07 | 3.09 |
| 10 | 3.06 | 3.11 | 3.07 | 3.09 | 3.07 |
|  |  |  |  |  |  |