

## Nutritional Status of a Group

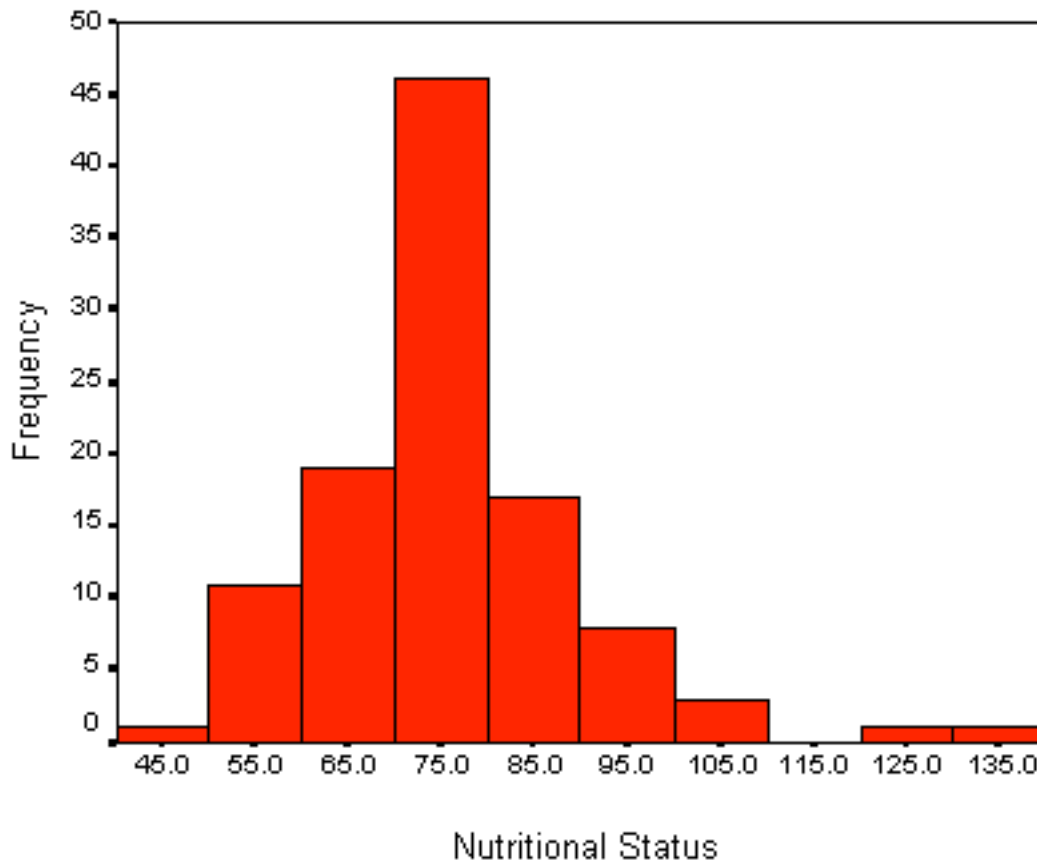
N. Thilothammal, P.V. Krishnamurthy, Desmond K. Runyon, and K. Banu designed a study to determine the efficacy of BCG (bacillus Calmette-Guerin) vaccine in preventing tuberculous meningitis in “Does BCG Vaccine Prevent Tuberculous Meningitis?” in *Archives of Disease in Childhood*, 74 (1996), 144-147. Among the data collected on each subject was a measure of nutritional status (actual weight expressed as a percentage of expected weight for actual height). The following table shows the nutritional status values of the 107 cases studied, the percentages arranged in order from lowest to highest.

45.6	66.0	72.7	76.9	84.7
50.4	66.3	72.7	76.9	85.4
50.5	66.3	72.8	76.9	86.4
50.9	67.3	73.0	77.4	88.2
54.6	67.5	73.2	77.5	88.7
55.0	67.7	73.3	78.1	89.6
55.5	68.1	73.3	78.1	90.9
55.7	68.3	73.6	78.2	91.9
56.8	68.6	73.6	79.3	92.3
58.8	70.0	73.8	79.6	92.5
59.0	70.0	74.0	79.6	93.7
59.7	70.0	74.0	80.0	96.0
60.6	70.5	74.0	80.2	97.5
61.3	70.5	74.0	80.5	99.6
63.4	71.0	74.6	80.6	100.0
64.1	71.0	76.4	80.7	100.0
64.5	71.4	76.5	82.4	109.0
64.8	72.0	76.5	82.6	123.7
65.6	72.2	76.9	83.0	130.0
65.7	72.3	76.9	84.0	
65.9	72.4	76.9	84.4	
65.9	72.6	76.9	84.6	

A quick inspection of the data reveals a grossly underweight group of children. Only 5 of the 107 are at or above their expected normal weight with over half the group less than 75% of their normal expected weight. The nutritional status measure for the group has a range of 84.4, from a low of 45.6 to a high of 130.0. Additional statistics are in the table below.

	Statistic
Mean	75.397
5% Trimmed Mean	74.753
Median	73.800
Variance	186.165
Std. Deviation	13.644
Minimum	45.6
Maximum	130.0
Range	84.4
Interquartile Range	13.100

From the histogram below, we see that the data is slightly skewed to the right, with the pair of values over 120 being outliers with respect to this group. On the other hand, the main block of nutritional status values seems to be fairly symmetric, with a good cluster of values around 75, which can be taken as a convenient approximate center of the distribution since the median, mean, and trimmed mean are all in that vicinity.



There seems to be quite a spread among the data despite the bunching at the center. It is informative that the interquartile range is only 15.5% of the entire range. Most of the nutritional status values are bunched near the center of the distribution. This can be seen even more clearly in the box plot at the top of the next page. Even after eliminating the 6 items indicated as

outliers and extremes in the box plot, the interquartile range is still only 24.3% of the remaining range. Again stressing the bunching at the center of the distribution, we have that almost 74% of the nutritional status values are within one standard deviation of the mean.

In conclusion, this group seems hardly representative of the population of children at large since the typical member has only 75% and the great majority have only 60-90% of their expected body weight.

