

Index Score Distributions

June 2011

The current research brief provides a description of the index scores of new undergraduates from fall 2006 through fall 2010. The conclusion appears to be that index distributions are stable over time and unimodal.

The average index score was highest in fall 2009 but has not varied by more than 1.66 points in five years. The standard deviation has also remained relatively consistent over time. The distributions are approximately symmetric (± 0.5) with the skewness actually decreasing over the time.

Table 1 displays the descriptive statistics.

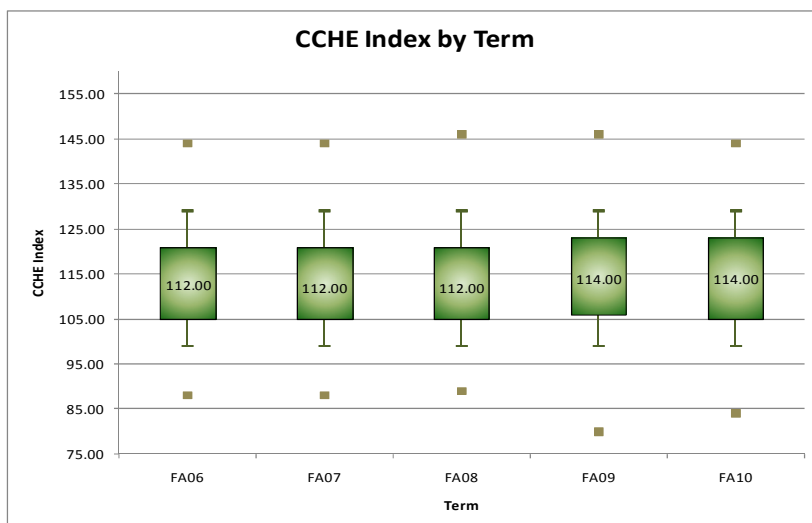
Table 1.

Descriptive Statistics

| TERM | N | Mean | SD | Skew. | Kurt. | Min. | Max. | Percentiles | | | | |
|------|------|------|------|-------|-------|------|------|-------------|-----|-----|-----|-----|
| | | | | | | | | 10 | 25 | 50 | 75 | 90 |
| FA06 | 4024 | 113 | 10.7 | .306 | -.583 | 84 | 144 | 99 | 105 | 112 | 121 | 129 |
| FA07 | 4330 | 113 | 11.0 | .269 | -.657 | 88 | 144 | 99 | 105 | 112 | 121 | 129 |
| FA08 | 4355 | 113 | 11.1 | .287 | -.690 | 88 | 144 | 99 | 105 | 112 | 121 | 129 |
| FA09 | 4239 | 114 | 11.2 | .115 | -.745 | 89 | 146 | 99 | 106 | 114 | 123 | 129 |
| FA10 | 4416 | 114 | 11.4 | .112 | -.734 | 80 | 146 | 99 | 105 | 114 | 123 | 129 |

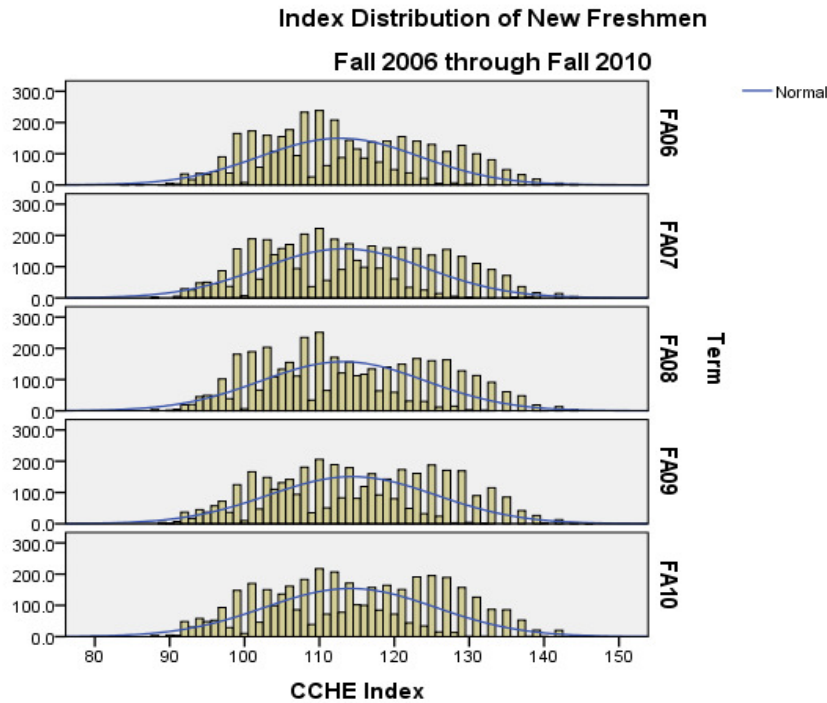
Chart 1 displays a box plot to begin to visualize each of the distributions. It also demonstrates the stability of the index scores over time.

Chart 1.



While chart 1 allows a visualization of the overall distribution, histograms of the yearly distributions (chart 2) help to visualize the slightly low kurtosis seen in the descriptive statistics and also raise the issue of modality.

Chart 2.



“The difference between the mean and the mode of a unimodal distribution is less than or equal to the square root of three times the standard deviation” (<http://www.btinternet.com/~se16/hgb/mode.pdf>). Using this definition, as Table 2 displays, we can conclude that the index of new freshmen who enter in the fall is unimodal.

Table 2.

| Modality Statistics | | | | | | | | |
|---------------------|------|------|--------|------|--------|-------------|--------|---------------|
| TERM | N | Mean | Median | Mode | SD | Mean - Mode | 3 SD | Sq. Root 3 SD |
| FA06 | 4024 | 113 | 112 | 110 | 10.728 | 2.722 | 32.185 | 5.673 |
| FA07 | 4330 | 113 | 112 | 110 | 10.986 | 3.225 | 32.958 | 5.741 |
| FA08 | 4355 | 113 | 112 | 110 | 11.056 | 3.178 | 33.168 | 5.759 |
| FA09 | 4239 | 114 | 114 | 110 | 11.229 | 4.379 | 33.687 | 5.804 |
| FA10 | 4416 | 114 | 114 | 110 | 11.438 | 4.103 | 34.315 | 5.858 |

Please contact the Office of Institutional Research with any questions/comments.