

Linking Old FCQ Scores to the New FCQ Score Scale: Technical Information

As a first step in linking old (pre-fall 2006) FCQ scores to the new (fall 2006 and later) FCQ score scale, empirical linkages were developed using data from fall 2006 (n = 154,614 FCQ forms) and fall 2005 (n = 151,531). Data from the Boulder, Colorado Springs, and UCDHSC campuses were included. Because the FCQ is anonymous, students who rated instructors in both fall 2005 and fall 2006 could not be identified; the data therefore are unmatched. It is assumed, however, that these groups are "equivalent" in the sense that they have had similar collective educational experiences at CU.

The linkages are based on data from the "instructor overall" item (Item 8 on the new FCQ; Item 12 on the old) and the "course overall" item (Item 7 on the new FCQ; Item 11 on the old). Linkages were developed by instructor group, within campus. Several linking methods were used, including mean, linear, parallel linear, and equipercentile (with and without post-smoothing).

Within subgroups, the linear, parallel linear, and equipercentile methods produced similar linkages, with small differences (less than 1/2 point on the new FCQ scale) occurring at scores below 1 on the old FCQ. We focused on the results of the linear method, in part, because they are formulaic, unlike those of the equipercentile method, and can therefore be used directly by instructors and staff members who themselves wish to convert old FCQ scores to estimated new FCQ scores.

There was some variability across subgroups for the linear linkage. For example, TAs at UCDHSC had a smaller intercept parameter than did Boulder TAs.

In the linear method, scores on the new FCQ (Y) are expressed as a function of scores on the old FCQ (X),

$$Y = AX + B,$$

$$\text{where } A = \frac{S_Y}{S_X} \text{ and } B = \bar{Y} - \frac{S_Y}{S_X} \bar{X}.$$

In this equation, \bar{X} and \bar{Y} and S_X and S_Y denote means and standard deviations, respectively, on the old and new FCQs.

After examining the results of the linear linkage, it was decided that subgroup variability was likely a function of systematic error occurring from possible non-equivalency of subgroups in fall 2006 and fall 2005, and the fact that statistical adjustments could not be made for instructor maturation or improvement occurring over this period. Consequently, we decided to map algebraically the old F (0) to A (4) scale to the new 1 to 6 scale, using

$$\begin{aligned} Y &= X \left(\frac{Y_{MAX} - Y_{MIN}}{X_{MAX} - X_{MIN}} \right) + (Y_{MIN} - X_{MIN}) \\ &= \frac{5}{4} X + 1 \end{aligned}$$

This has the effect of essentially "stretching" the old scale to fit the new scale. Estimated scores on the new FCQ yielded with this equation are generally similar to those of the linear linkage for the total group.