

# Benchmarks

## Construction of the 2000 - 2002 NSSE Benchmarks

The benchmarks were created with a blend of theory and empirical analysis. Initially, we conducted principal components analyses with oblique rotations. Then theory was employed to crystallize the item groupings into the respective benchmarks. Only randomly sampled cases were included in the calculation of institutional benchmarks. Before we performed any calculations, we subtracted one from each of the 41 items contributing to the benchmarks to make the minimum possible response equal to zero.

Benchmarks for (1) level of academic challenge, (2) student-faculty interaction, (3) enriching educational experiences, and (4) supportive campus environment were constructed from items that did not have identical response sets. After we subtracted one from each item response, items evinced response sets that ran from 0 to 3, others ran 0 to 4, and still others, 0 to 7. To make the response sets comparable between items that had different response sets, we determined which response set occurred most frequently among items that comprised each benchmark. For each item with a response set that was not the most frequently occurring set, we divided the student's response by the maximum possible response on the item. Finally, we multiplied this quotient by the maximum possible response from the most frequently occurring response set, yielding a group of items with an identical range. For instance, the most frequently occurring response set on items contributing to academic challenge ranged from 0 to 3. We took each response to READASGN, and divided this number by four. Finally, we multiplied this quotient by three (the maximum possible response on the most frequently occurring response). The benchmark for supportive campus environment was comprised of equal numbers of items with 0 to 3 and 0 to 6 response sets; we used the 0 to 3 set as the standard.

Enriching educational experiences contained six items (INTERN, VOLUNTER, FORLANG, STUDYABR, INDSTUDY, and SENIORX) that were recoded prior to creating the benchmark. Specifically, we recoded "undecided" student responses on these six items to missing. In turn, we coded "no" responses as 0 and "yes" responses as 1. In addition, the item RESEARCH was recoded prior to creating the student-faculty interaction benchmark. We coded "no" and "undecided" responses as 0, and "yes" responses as 1 for both classes. After these recodings, response sets for items contributing to enriching educational experiences and student-faculty interaction were made comparable as described in the preceding paragraph.

After ensuring that response sets were comparable for items at the student level, we created the benchmarks at the institutional level. Specifically, weighted institutional means were obtained for each item for both first-year and senior students. In other words, we aggregated student responses from each school into weighted means on each item. Next, institutional means for each item were summed to obtain five raw institutional benchmarks for both first-year students and seniors. Finally, we equalized the raw institutional benchmark metrics by transforming each raw benchmark onto a 100-point scale. To do this, we divided each raw institutional benchmark by the maximum possible raw institutional benchmark, and multiplied by 100 percent. The formula to convert raw institutional benchmarks into benchmarks on 100-point scales is:

$$\text{Final Benchmark} = \frac{\text{Raw Institutional Benchmark}}{\text{Maximum possible raw Institutional Benchmark}} \times 100$$