

## **UMBC & NSSE (National Study Of Student Engagement)**

Compilation: UMBC OIR analysis, with the help of NSSE materials & from direct responses supplied by Dr. George Kuh, NSSE Project Director (in quotations).

### **What is NSSE?**

A national survey (The College Student Report) of first-year and senior level undergraduate students at both public and private four-year institutions. Piloted in 1999, it was first administered nationally in 2000, and repeated in 2001. UMBC has participated these first two years. The NSSE survey attempts to gauge the extent to which colleges are providing educational experiences associated with important learning and personal development outcomes for their students. Co-sponsors for the NSSE project are the Pew Charitable Trusts and the Carnegie Foundation for the Advancement of Teaching. The project's Director is Dr. George Kuh, Chancellor's Professor Of Education, Indiana University. The NSSE national advisory board and technical advisory panel are comprised of several of the most well respected higher education researchers in the country today. It is arguably the most rigorous and well-researched national survey of its kind.

The project is housed at the Center for Post-Secondary Research & Planning at Indiana University. Their website, which contains abundant information about the project, is [www.indiana.edu/~nsse](http://www.indiana.edu/~nsse). **We urge everyone interested to go to the website and find out more about the project.**

### **How are students sampled?**

A scientific random sample of first-year and senior students is surveyed from a convenience sample of participating institutions. Institutions pay a fee ranging from \$2,500 to \$5,500 (depending on undergraduate enrollment) to participate. NSSE 2000 involved 276 institutions, and 321 institutions participated in NSSE 2001. The array of participating institutions each year has generally been representative of the different types of four-year institutions nationally. Each participating institution sends NSSE a file containing the population of their first-year and senior students. NSSE generates a sample and handles survey administration.

Schools are given the option of having students respond via a traditional paper questionnaire, via the World Wide Web, or a combination of both. In 2000 UMBC used a combination of paper and web, while our NSSE 2001 administration was web only.

### **What's the response rate like?**

The NSSE 2000 response rate, for all institutions, was 42%. Our response rate was 36%. For UMBC this translated into 126 first-year and 121 senior respondents. (We doubled

our sample, although NSSE did not use the over-sampled group in their analyses. Internal analysis showed that the two groups were similar in terms of profile and responses.)

The NSSE 2001 response rate was again 42%; for UMBC it was better than the year before, at 39%. For UMBC this translated into 254 first-year and 255 senior respondents.

### **How valid and reliable is the NSSE questionnaire?**

Dr. George Kuh has written a very helpful paper, “The National Survey of Student Engagement: Conceptual Framework and Overview of Psychometric Properties”, available on the NSSE website. **We urge everyone interested to read this detailed methodological exposition.** In sum, the NSSE group has rigorously assessed issues of validity, reliability, and stability.

With regard to validity, they conclude, “Overall, the items on *The Report* appear to be measuring what they are intended to measure and discriminate among students in expected ways” (p. 11).

With regard to reliability, “Taken together, these analyses suggest that the NSSE survey appears to be reliably measuring the constructs it was designed to measure. Assuming that respondents were representative of their respective institutions, data aggregated at the institutional level on an annual basis should yield reliable results” (p.15).

“NSSE has carefully examined the stability of individual items as well as the benchmarks and the vast majority are good. Wording was changed on a few items making them less stable from 2000 to 2001 (e.g., came to class unprepared, had serious discussions with students from different backgrounds)”. NSSE says first-year student responses to items contributing to the enriching educational experiences benchmark are most susceptible to year-to-year differences based on student characteristics. In addition, values for both the “student-faculty interaction” and “enriching educational experiences” benchmarks evidenced a trend toward higher scores in 2001 as contrasted with 2000.

“For NSSE 2001, the sampling errors are fairly small for UMBC respondents, only about 5% or so, indicating that the results will almost always be + or – 5 points. This is quite good for this kind of work” (email communication from Kuh).

### **Are the UMBC samples representative of our first-year and senior populations?**

#### NSSE 2000

UMBC’s first-year respondents were representative of the first-year population with regard to race/ethnicity, and major. They were less representative with regard to gender (56% female compared with 45% in the population) and living on campus (67% compared with 60% in the population).

UMBC's senior respondents were representative of the senior population in terms of race/ethnicity and major. They were less representative with regard to having come to UMBC as transfer students (71% compared with 58% in the population), being part-time (42% compared with 33% in the population), being female (60% compared with 50% in the population), and being older (39% age 30 or older compared with 22% in the population).

### NSSE 2001

As for the NSSE 2001 study, UMBC's first-year respondents were representative of the first-year population with regard to race/ethnicity, and major. They were less representative of the population with regard to gender (59% female compared with 46% in the population) and living on campus (76% compared with 67% in the population).

UMBC's senior respondents were representative of the senior population in terms of race/ethnicity, age, and major. They were less representative of the population (but in different ways from the NSSE 2000 sample) with regard to having come to UMBC as transfer students (49% compared with 56% in the population), being part-time (14% compared with 21% in the population) and being female (60% compared with 54% in the population).

### **Does the composition of our samples affect the UMBC findings in any way?**

#### First-Year Students

Benchmark scores for our first-year respondents increased noticeably from NSSE 2000 to NSSE 2001. Substantial increases were found on individual items such as "studying a foreign language" and "studying abroad". These increases may be due to the combination of factors: an increase in the percentage of UMBC-NSSE respondents living on campus, from 67% to 76% in NSSE 2001; an even higher percentage of female students responding; an exclusively web survey administration; and an increased emphasis on study abroad (hiring of a coordinator of Study Abroad; focused dissemination of Study Abroad information at freshmen orientation, etc.). First-year students are fully wired in residential halls and thus more apt to respond to a NSSE web survey. Research shows that the web mode of surveying typically leads to somewhat more positive responses than the paper mode.

At the same time, first-year students living on campus are arguably more integrated into the campus community, better able to engage in profitable educational practices, e.g., spending time discussing ideas from their classes with faculty and other students, spending significant amounts of time studying and on academic work, working with faculty members on activities other than coursework, etc. Still, our absolute benchmark scores and individual item averages are not as high as we would like them to be.

## Senior

The composition of our NSSE 2000 and NSSE 2001 senior respondents is quite different. However, the same low benchmark scores for the seniors in both years and individual item averages accrue, which adds credence to the reliability and stability of this instrument for senior level undergraduates. The transfer component of UMBC's undergraduate population is appreciable, and cannot be ignored. When senior NSSE respondents are split out to compare those who were transfers into UMBC with those who started here as new freshmen, transfer student averages are revealing.

Transfers have statistically significant lower averages on: "talked about career plans with a faculty member or adviser"; "worked with faculty members on activities other than coursework"; and experiential items, namely having done a practicum/internship, done community service/volunteer work, worked on a research project, etc. Transfers have statistically significant higher averages than "native" students on the following items: "prepared two or more drafts of a paper or project before turning it in"; "came to class having completed readings or assignments"; "worked with other students on projects during class"; "worked harder than you thought you could to meet an instructor's standards"; "**working for pay off campus**"; and, "**providing care for dependents living with you**". These last two are highlighted because they relate to the other significant differences. Many transfer students are older, have family obligations, and work a lot more while going to school, particularly off-campus. Time scarcity is certainly an issue and militates against integration into the campus community and availability for opportunities in experiential learning.

"NSSE recommends as a key step for institutions, to drill down into the data to look at individual items across different kinds of students. By looking at patterns across individual items institutions may wish to focus on specific aspects of the undergraduate experience--to point to areas where action may be warranted". In our case, the experience of transfer students may well be a place to begin our focus.

### **What should we make of UMBC's percentile rankings in comparison to other institutions?**

The issue of substantive significance versus statistical significance is germane here. It is possible that given the attenuated range in which all NSSE institutions score, small standard deviations may produce large differences in percentile rankings. In other words, what separates the 20<sup>th</sup> and 70<sup>th</sup> percentiles may be only 3-7 points difference in the benchmark scores. What may be statistically significant may be substantively less so.

"NSSE is not drawing conclusions about these particular results--they are leaving that to the individual institutions. With regard to size of differences, it is not likely that a difference of 2-3 points on any given benchmark represents something to be concerned about. A pattern of such differences over a two or three-year period, however, may be enough to warrant additional examination. While normative comparisons against other

similar types of institutions can be valuable, another important consideration is whether faculty members and others at UMBC are satisfied with the frequency with which students report engaging in various effective educational practices.”

Still, this remains a key critical point and one to which we need to be sensitive. NSSE has emphasized this in various places and the reason why they provide effect size estimates for comparisons of individual item averages (not done with benchmark scores). “Effect size represents the magnitude of the discrepancy in the student or institutional behavior represented by the item: .20 is a small effect, .50 is medium, .80 large. When the effect size is large, or a pattern of moderate effect sizes exists, it’s likely that the quality of the student experience represented by the survey questions(s) is appreciably different and, therefore, may be of practical as well as statistical significance.” UMBC does not have any large effect sizes but does have a pattern of moderate effect sizes across the two years, which warrants further investigation involving the collection of substantiating information from independent sources (UMBC effect size statistics available upon request). In sum, the effect sizes are large enough that we can’t dismiss them, but we need help from faculty in corroborating these findings based on their experiences with students inside and outside the classroom.

**Given the strengths and weaknesses of the survey method and NSSE’s approach, how much credence should we put in these data?**

Dr. George Kuh and the NSSE group clearly and consistently maintain that “NSSE is but one source of evidence of student engagement. Any conclusions drawn from the data must be done in the context of UMBC and with as much additional corroborating information as possible.” We do have a little corroborating evidence already, in results from our recent undergraduate satisfaction survey, which can be found on the OIR website ([www.umbc.edu/oir](http://www.umbc.edu/oir)). Three examples from the executive summary of the report (pp. 1-2): 1) “there appears to be substantial dissatisfaction with the campus climate and sense of community at UMBC”; 2) “transfer students are twice as likely to report dissatisfaction with the quality of instruction”; 3) and, “students have lower satisfaction with facilities specifically targeted for specific educational purposes, as well as space for studying or socializing and relaxing.”

NSSE staff and members of their advisory boards are comfortable with the reliability and validity of the survey items and so are we. NSSE maintains that “Within-institution differences are greater than between institution differences. Therefore, while the between school differences may not be that great, some large within-institution differences related to particular groups of students may explain why UMBC’s overall scores in some areas may be somewhat smaller than the comparison group.” OIR has investigated within-institution differences and one of these, the transfer student difference, has been highlighted above. Transfer status stands as a “proxy” for certain sociological realities (e.g., caring for dependents, needing to work a lot off-campus, etc.) that may cut against a higher level of educational engagement, integration into the campus, etc.

In addition, in comparison to students from other Doctoral/Research Extensive universities and in comparison to the national NSSE sample, our respondents major in science and technology in much higher percentages (on the order of 25 percentage points higher). For NSSE 2000, OIR identified nine other institutions taking part that have strong emphases in science and technology (e.g., Georgia Tech) and asked NSSE for their individual item averages. While the number of benchmark items for which we were significantly lower was cut in half (from 18 to 9), we still were lower on a good number. Therefore, after controlling for institutional program concentration, i.e., science and technology, we still find significantly lower differences.

To further investigate the issue of science and technology concentration, OIR was able to look at all coursework for UMBC-NSSE senior respondents for the academic year in which these seniors completed the NSSE survey. From these data, the following statements can be made about senior respondents having a heavy science and engineering course load during the academic year in which they responded to the NSSE survey:

- 1) Their averages are significantly lower than those with a lighter science and engineering course load with regard to these selected items: “number of assigned textbooks, books, or book-length packs of course readings”; “number of written papers or reports of fewer than 20 pages”; “making judgments about value of info, arguments, methods”; “asked questions in class or contributed to class discussions”; “talked about career plans with a faculty member or adviser”; “acquiring a broad general education”; “writing clearly and effectively”; “had serious conversations with students of different race and ethnicity than their own”; “developing a personal code of values and ethics”; “understanding yourself”; and, “quality of relationships with faculty members.”
- 2) In many cases, senior respondents with much lower concentrations of science and engineering courses have averages that are equal to or better than corresponding comparison averages for Doctoral-Research Extensive university seniors and the national sample of seniors.

Given #1 and #2 above, are there legitimate curricular and pedagogic expectations for science/engineering courses that would explain away these differences? Faculty are best suited to answer this question. If the answer is “no” then a special focus on pedagogy and student experiences in UMBC’s science and engineering curricula may be warranted.

In sum, we believe the NSSE survey is quite robust. “Its items are highly correlated with desired outcomes of college” [learning and personal development]. According to Kuh, “NSSE has yet to hear from a school that has found its results to be inaccurate when compared with anecdotal or other empirical information the institution has about its students.” We look to the academic programs at UMBC to evaluate the two years of data we have for our first-year and senior students in light of information they have from other sources.