NRC methodology-related questions

1. Where did the NRC get the data?
   The data consists of answers to questionnaires that were sent to the participating universities, the doctoral programs, their faculty, and to advanced doctoral students in physics, English, chemical engineering, economics, and neuroscience. Data also were collected from the National Science Foundation and the Institute for Scientific Information (now a part of Thomson Scientific) and from 224 scholarly and honorary societies. A detailed methodology report will be available on the NRC web site, http://sites.nationalacademies.org/pga/Resdoc/index.htm.

2. How did the Graduate School participate in the data collection?
   To collect and compile Cornell’s data, the Graduate School worked closely with representatives from the fields of study to gather, interpret, and verify all information prior to releasing it to the NRC. Data were first obtained from the central university records and then submitted to the graduate programs for verification. Necessary adjustments to the data were made based on feedback from the graduate programs. Then, final reports were reviewed with the field representatives, department chairs, and associate deans prior to submission to the NRC.

3. How was it decided which Cornell fields would participate?
   Not all fields fit the NRC criteria for inclusion in the study. Some fields did not match well to any of the NRC definitions because of their interdisciplinary structure, while others did not meet the size...
threshold needed to participate. We could not merge or split programs in order to assemble virtual programs that matched NRC taxonomy. Also, some fields were identified as “emerging” fields and not included in this study. Some institutions submitted only a few of their top fields for ranking. Cornell submitted all fields that made sense to include according to the NRC’s definitions to be ranked in the study.

4. Given our interdisciplinary field structure, how did the Graduate School determine which faculty were included within a field?

Faculty lists were compiled for each program by the Graduate School based on special committee service, with verification from each participating field. Faculty could only be counted in a field if they had recent service on a PhD committee and/or met the other criteria (details below). Faculty productivity could be apportioned between multiple fields based on special committee service.

Some requested data, like specialization and ethnicity, were not supplied centrally but faculty provided it later via the direct questionnaire they received. The NRC created three classes of faculty; Core, New and Associated.

Core faculty were defined as:

1. have served as a chair or member of a program dissertation committee in the past 5 academic years (2001-2002 through 2005-2006) OR
2. are serving as a member of the graduate admissions or curriculum committee
   The faculty member must be currently (2006-2007) and formally designated as faculty in the program, and not be an outside reader who reads the dissertation but does not contribute substantially to its development. Include emeritus faculty only if the faculty member has, within the past three years, either chaired a dissertation committee or been the primary instructor for a regular PhD course.

New faculty were defined as:

1. do not meet the criteria for core faculty, but who have been hired in tenured or tenure track positions within the past three academic years (2003-2004 through 2005-2006) AND
2. are currently employed at your university and are expected to become involved in doctoral education in your program

Associated faculty were defined as:

1. have chaired or served on program dissertation committees in the past five years (2001 2002 through 2005-2006), AND
2. have a current (2006-2007) appointment at your institution, but who are not designated faculty in the program.
3. They should not be outside readers, or faculty currently employed at other universities, unless they are on leave from the faculty at your institution. Include emeritus faculty only if the faculty member has, within the past three years, either chaired a dissertation
5. Why did the NRC use ranges of rankings instead of a single number?

A> The NRC felt that assigning a single number to a field of study based on a snapshot of information from a particular point in time and using a standard set of variables is inherently inaccurate.

According to information published by the NRC, the advising committee felt strongly that assigning a single number and ranking them accordingly would be misleading, since there are significant uncertainties and variability in any ranking process. Uncertainties arise from assumptions made in creating a ranking model based on quantitative data on program characteristics. Even with such a model, variability arises from numerous sources, including differences in the views among the faculty surveyed, fluctuations in data from year to year, and the error inherent in estimations from any statistical model. The ranges reflect some of this uncertainty and variability.

6. What are the S-rankings?

A> The S-rankings are derived from surveys that reflect the degree to which a program is strong in the characteristics that faculty in the field rated as most important to the overall quality of a program. Through these surveys, faculty in most fields placed the greatest weight on characteristics related to faculty research activity, such as per capita publications or the percentage of faculty with grants. Therefore, programs that are strong in those characteristics tend to rank higher.

7. What are the R-rankings?

A> The R-rankings are based on an indirect approach to determining what faculty value in a program. First, a sample group of faculty were asked to rate a sample of programs in their fields. Then, a statistical analysis was used to calculate how the 20 program characteristics would need to be weighted in order to reproduce most closely the sample ratings. In other words, the analysis attempted to understand how much importance faculty implicitly attached to various program characteristics when they rated the sample of programs. Weights were assigned to each characteristic accordingly -- again, these varied by field -- and the weights were then applied to the data on these characteristics for each program, resulting in a second range of rankings.

8. Why do some fields appear higher on one ranking and lower on another?

A> Although each approach was based on the same program data, different sets of weights were applied to the data, yielding different ranges of rankings. For the R-rankings, program size as measured by numbers of PhDs produced, averaged over five years, was frequently the characteristic assigned the largest weight. For S-rankings, programs particularly strong in research activity as measured by variables such as number of faculty citations or publications received the greatest weight.
9. Which is more accurate the R-ranking or the S-ranking?
A> The National Research Council is not endorsing either ranking or any ranking as the best indicator of program quality, but instead is providing the R- and S- rankings as illustrations of how rankings can be created by applying weights to data on program characteristics. The degree of importance attached to each program characteristic depends on how the rankings are to be used. The program data are being made available so that users can compare programs based on the characteristics that are most important to them.

10. Why were the data reported by 5th and 95th percentiles? What does that mean?
A> The range of rankings has a 90% confidence interval. The accuracy of these rankings carries a certain level of uncertainty. The degree of uncertainty in the rankings is quantified in part by calculating the S- and R-rankings of each program 500 times. The resulting 500 rankings were numerically ordered and the lowest and highest five percent were excluded. Thus, the 5th and 95th percentile rankings -- in other words, the 25th highest ranking and the 475th highest ranking in the list of 500 -- define each program's range of rankings.

11. How does this differ in methodology from the NRC's previous report released in 1995?
A> This study collected new and more comprehensive data about doctoral students and faculty than the previous studies. It includes information on how students finance doctoral education and other aspects of student resources, as well as teaching. It also expands the number of doctoral disciplines included in the study and uses new approaches and more involved statistical techniques to presenting ratings and rankings of programs.

12. How does this methodology compare to other ratings and rankings of doctoral programs?
A> This methodology builds on the previous two NRC studies of the Research Doctorate in the United States. It represents a comprehensive and improved approach to doctoral program assessment that is intended to be useful to students, administrators, faculty, public policy makers and others interested in doctoral education.