



Professional Science Master's Degrees: Data Needs and Issues

Professional Science Master's 101:
A Technical Workshop
11 July 2006

Eleanor L. Babco
Co-Project Director
CGS/Sloan PSM Initiative



Why Do We Need Data?

- To make decisions ...
 - If no data ...
 - Everyone is an expert; no one is an expert
 - Only anecdotal information is available for career-forming decisions
 - Discussions produce rhetoric; few answers
 - If data ...
 - Accurate and valid information can be utilized for program improvement, continuation, or modification
 - Students can make informed career decisions
 - Basis for longitudinal studies or evaluation
 - Policy can be formulated



Why Do We Need Data?

- **To Set Goals**
 - About Growth
 - About Sustainability
 - About Future Direction of PSM Programs
- **Determine Whether PSM Programs Are Successful**
 - Enrollments are Growing
 - Rising Numbers of Graduates! Finding Jobs!
- **Document the Unanticipated**
 - Graduates not getting jobs in non-academic sectors continuing on to PhD programs



Why Do We Need Data?

- Discontinuation of Programs
 - Change in Student Demand
 - Change in Employment Opportunities
 - Change in Faculty

Data Tell Stories

- Motivates New and Continuing Students
- Helps Inform Replication of PSM Programs Elsewhere
- How Career Paths of PSM Grads Differ from Regular Master's Degree Graduates
- Media outlets love "stories"



History of Previous Data Collections

- CPST Data Activities
 - Online database of science master's programs
 - 2046 science master's programs in 302 colleges and universities in all 50 states plus Puerto Rico and DC*
 - Searchable by discipline – 20 science disciplines; 19 engineering subdisciplines
 - Searchable by state – Map pops up – just click on the state e.g. Massachusetts – 80 different programs
 - Searchable by institution – listing of institutions with stand-alone master's degree programs

*** As of July 3, 2004**



History of Previous Data Collections (continued)

- **CPST Data Activities (continued)**
 - Advanced Search – identify professional programs, including the PSM; provides online program information; and if program accommodates working professionals, e.g. only 6 of the 80 master’s programs in MA are professional and 5 are PSMs. In CT all 3 are PSMs
 - Second online database – over 180 data tables on enrollments, degrees, workforce
 - Searchable by keyword
 - Searchable by category



History of Previous Data Collections (continued)

- PSM Initial Employment Survey
 - Data collected on:
 - Personal Characteristics
 - Job Search
 - Employment Status
 - Unemployment status
 - Program Assessment



History of Previous Data Collections (continued)

- PSM Initial Employment Survey
 - Results from 2004-05 Survey
 - 58 respondents (10.9%) at 16 different PSM schools
 - Nearly one in four (22.4%) were graduates of biosciences, applied biosciences or biotechnology PSM programs
 - The majority (84.5%) were enrolled full-time
 - Loans and university employment) were the most common methods PSM graduates paid for their studies
 - Internships were cited by nearly half (48.2%) as the most useful service provided by their PSM faculty and staff
 - Three-fourths of respondents reported at least one job offer by time of survey completion



History of Previous Data Collections (continued)

- **Sciencemasters.com Database (Tobias)**
Data collected by:
 - Institution and Program Track
 - Enrollments and Graduates



What Do We Currently Know?

- **PSM Programs**
 - Currently 108 programs in 20 states in 54 institutions
- **PSM Total Enrollments**
 - Through Fall 2005 – about 3,400
 - In 2005 alone – over 1,300
- **PSM Graduates**
 - Through Fall 2005 – about 1,200
 - In 2005 alone – about 530



~100 degrees, ~50 institutions,
~20 states

- Math – Financial, Industrial, Computational Sciences, Statistics for Entrepreneurship, or for Environmental Decision Making
- Physics – with Business Applications, Physics of Modeling, Industrial Physics, for Entrepreneurship
- Biological Sciences – Bioinformatics, Biotechnology, Applied BioSciences
- Computational Biology, Computational Chemistry
- Forensics
- Bioanalytical Chemistry, Biomolecular Chemistry
- Geographical Information Systems



PSM Enrollments and Degrees

- About half in Biosciences; about 1/6th in Mathematics
- Over 40% are female
- About 70% are U.S. citizens
- About 8% minority



Current Status of Data Collections at CGS

- **Enrollments and Graduates**
 - Utilizing Survey Template from CGS/GRE Survey of Graduate Enrollment and Degrees for academic year 2005 – sent data sheets to 52 institutions for 101 programs.
 - Enrollment Data Collected by:
 - Gender, Race/Ethnicity, First-time/Total, Full-time/part-time,
 - Degree Data Collected by:
 - Sex
 - Applications Data Collected by
 - Master's/Certificate/Total, Accepted/Not Accepted
 - Sent: June 12, 2006 – As of 7/3/06: 18 surveys from 9 institutions returned



We Need Your Input

On Collecting Data Thoughtfully:

“Far better an approximate answer to the right question... than an exact answer to the wrong question.” John Tukey



We need Your Input (continued)

- When to Collect?
 - Are some times better than others?
- How to Collect?
 - Online? Continuation of current CGS/GRE Graduate Enrollment and Degrees survey?
- Who Should Collect?
 - Deans? PSM Program Directors? Institutional Research Offices? Alumni Associations?



We Need Your Input (continued)

Now, what are the right question(s)?

- Enrollments
 - By gender, race/ethnicity, citizenship, program, enrollment status, first time/total

- Graduates
 - By gender, race/ethnicity, citizenship, program

- Programs
 - Number and discipline



We Need Your Input (continued)

Now What Are the Right Questions? Post-graduation Information

Initial Employment Survey

- Employment Status
- Employment Sector
- Starting Salary Ranges
- Time to First Job
- Resources Used to Obtain Employment



We Need Your Input (continued)

Now, what are the right question(s)?

Career Tracking

- Changed jobs?
- Employer change?
- Salary Change?
- Responsibility Change?



For further information:

Contact

ebabco@cgs.nche.edu

Council of Graduate Schools www.cgsnet.org

Go directly to www.sciencemasters.com