



## Abstract

NIGMS identified the educational and career outcomes for participants supported between 1989-2006 by the Supplements to Promote Diversity in Health-Related Research (PA-12-149). Paper records were converted to a structured format and output measures obtained from publically available web-based information. Information was available on degree attainment for over 80% of graduate students, and subsequent career information for 90% of Ph.D. holders from both graduate student and postdoctoral stages. The analysis revealed excellent Ph.D. completion rates for graduate students, and differences in Ph.D. origin between trainees at the graduate student and postdoctoral levels. Career outcomes reflected similar distributions of career sectors for these trainees as the 2012 report from the Advisory Committee to the Director on the Biomedical Workforce.<sup>1</sup>

## Approach – Public Media & Data Curation



Figure 1: Initial Dataset

Key data from the application and award --trainee name, training institution, mentor name, date of appointment, career stage of trainee -- were collected in a spreadsheet and used to initiate public data mining:

- Web sites such as Google, LinkedIn, Scopus, PhDTree, NIH Reporter, Intellius, patent information, and institutional websites on faculty /alumni were probed
- Validation included data confirmed from multiple sources
- Degree attainment was not considered “complete” without degree, year, and institutional information.
- Fuzzy matching tools used to connect institutional names
- Job Titles mapped to career sectors for post-training positions

### Educational Data

terminal degree, degree institution, degree year

### Career information

job title, job institution, job state

## Results – PhD Degree Attainment

DSP participants supported at the graduate student level completed the Ph.D. with at least 73% success (trainees in “unknown” could not be identified, but may have received a subsequent degree). The Council of Graduate Schools<sup>2</sup> points to a 65-70% Ph.D. completion rate, while NIH-wide Ph.D. completion rates in predoctoral NRSA programs was 79.4% in FY2012.

Degree Type	Graduate Students		Postdocs
	Count	Percent	Percent
Ph.D. equivalent <sup>#</sup>	500	72.8%	85%
Master <sup>^</sup>	36	5.2%	0
Medical <sup>+</sup>	22	3.2%	12.1%
Bachelor <sup>^</sup>	*	*	0
Other	0	0	0
Unknown	128	18.6%	2.9%
Grand Total	(687)	100%	(306)

<sup>#</sup>includes Ph.D., M.D./Ph.D., Pharm.D. <sup>^</sup>includes M.S., M.A., M.P.H., M.B.A., M.P.T. <sup>+</sup>includes M.D., D.O., D.D.S., D.V.M., O.D. <sup>^</sup>includes B.S., B.A., B.S.E.E.   
 \*indicates fewer than 1% of individuals

Institutions where the PhD was earned were compared.:

- 84% of DSP graduate students earned Ph.D. s Research universities/ Very High compared with 70% among postdoctoral trainees.
- Postdoctoral trainees were more likely to have earned the PhD from institutions with substantial enrollment of students from underrepresented groups.

Type of School	% GS	% PD
HBCU	*	5
TCU	*	*
AIANSI	4	7
H.S.I.	4	8
AANAPIISI	5	5
PBI	*	*
Any Institution in Group	13	22

HBCU Historically Black College & University; TCU Tribal College & University; AIANSI American Indian Alaska Native Serving Institutions; H.S.I. Hispanic Serving Institutions; AANAPIISI Asian American and Native American Pacific Islander-Serving Institutions ; PBI Predominantly Black Institutions; (institutions may be in several of these categories)

## Results – Career Outcomes

Job Titles were mapped to various career sectors and compared to the US trained workforce as in the Advisory Committee to the Director, Biomedical Workforce Report, 2012.<sup>1</sup>

- The majority—65% of DSP PhDs--were in research careers

Biomedical Workforce <sup>1</sup>	Career Sector	DSP Grad with Ph.D.	DSP Postdoc with Ph.D.
43%	Academic Research or Teaching	40.6%	45.0%
18%	Industry Research	17.6%	11.2%
6%	Government Research	3.4%	4.0%
18%	Science-Related Non Research	23.5%	22.3%
13%	Non-Science	4.1%	4.8%
2%	Unemployed/Deceased	1%	1%
	Unknown	9.8%	11.6%
2008; n=128,000		1989-2006 N=434	1989-2006 N=254

Careers fuel the U.S. economic engine. Information on job state reflects workers and jobs.



Figure 2: Geographic distribution of DSP trainees with Ph.D. equivalents and career outcomes

## Observations

- Funding Opportunity Announcement states that “continuation of this program in the future will depend on evaluation of the career outcomes...”
- Educational and Career Outcomes were largely available
- Validation Tools and Rules important